ESI **The Erwin Schrödinger International Institute for Mathematical Physics**

Boltzmanngasse 9
A-1090 Wien, Austria

Scientific Report for the year 1994

Vienna, ESI-Report 1994

February 14, 1995

Supported by Federal Ministry of Science and Research, Austria
Available via anonymous ftp or gopher from FTP.ESI.AC.AT,
URL: http://www.esi.ac.at/

ERWIN SCHRÖDINGER INTERNATIONAL INSTITUTE OF MATHEMATICAL PHYSICS, REPORT FOR THE YEAR 1994

ESI, Pasteurgasse 6/7, A-1090 Wien, Austria

February 24, 1995

Table of contents

Impressum: Eigentümer, Verleger, Herausgeber: Erwin Schrödinger International Institute of Mathematical Physics. Offenlegung nach §25 Mediengesetz: Verlags- und Herstellungsort: Wien, Ziel der Zeitung: Wissenschaftliche Information, Redaktion: Peter W. Michor

Typeset by $\mathcal{A}\mathcal{M}\mathcal{S}$-TEX

Typeset by $\mathcal{A}\mathcal{M}\mathcal{S}$-TEX

General remarks

In the year 1994 ESI was host to 185 visitors from 33 countries. There were 118 preprints contributed to the preprint series, and 133 seminar talks or ESI-Colloquia were given. 4 conferences were organized in Vienna:

International Symposium in Honour of Boltzmann's 150th Birthday, February 23 –26, 1994.

Mathematical Relativity, July 25 – 29, 1994.

Spinors, twistors and conformal invariants, September 19–23, 1994.

On the Ising Model and Around it in Eight Days, October 17–24, 1994.

ESI took part in the organization of two more conferences abroad.

14th Winter school on geometry and physics, January 15–22, 1994, Srni, Bohemian forest, Czech republic.

Quaternionic manifolds, September 1–6, Trieste, Italy.

The first book coming out of an ESI activity has just appeared:
75 years of Radon transforms, Proceedings of the conference held at the Erwin Schrödinger Institute for Mathematical Physics in Vienna, August 31–September 4, 1992, S. Gindikin, P. Michor, eds.; Conference Proceedings and Lecture Notes in Mathematical Physics, Vol. IV, International Press, Cambridge (USA), 1994.

ESI is a founding member of the association "International Mathematical Sciences Institutes (IMSI)", Peter Michor attended the founding meeting of IMSI just before the International Congress of Mathematicians in Zürich, August 2, 1994. The next meeting of IMSI is scheduled for the International Congress of Applied Mathematics in Hamburg, beginning of July 1995.

The budget of ESI for 1994 was 9.5 Mio. AS. Of these 4.7 Mio. were spent for scientific activities, and 4.3 Mio. for administration and infrastructure. 34 visitors supported from other (mainly non-Austrian) sources contributed the equivalent of further 0.75 Mio. AS.

ESI is now in the second year of full activity. It seems to be more successful than could have been reasonably expected. Many visitors expressed positive opinions: the good working conditions, the style of the premises, that all visitors are equal, the smoothness of the administrative processes, the quality of some of the preprints, the simplicity and ease of use of the computer system (but 2 visitors wished for a fully fledged system of SUN workstations which are professionally managed).

FTP-server for POSTSCRIPT-files of ESI-preprints available

After some discussions with visitors of ESI, and after seeing many requests of preprints after sending out the email version of ESINews 3, we decided to make available via anonymous FTP the POSTSCRIPT-files of those preprints produced at ESI, of which we have the TeX-files, a list of all preprints, the newsletters, and all abstracts in ASCII form. In the year 1994 there were 606 preprints retrieved from this server.

Use anonymous ftp or gopher **ftp ftp.esi.ac.at (131.130.25.2)**, or use mosaic
http://www.esi.ac.at/

Note that the POSTSCRIPT-files are ASCII, they can be printed at every printer which can understand POSTSCRIPT with at least 300dpi or on UNIX systems using ghostscript.

Winter School in Geometry and Physics

The traditional winter school in geometry and physics which takes places for one week each January since 1980 in a picturesque village in the Czech parts of the Bohemian mountains will be a joint enterprise of the Czech society of mathematicians and physicists and ESI, from 1994 onwards. Usually there are proceedings, which are published as a supplement of the 'Rendiconti Matematici di Palermo'. The first conference with ESI-participation was in the period January 15–22, 1994, the proceedings for it are in preparation. The next winter school will take place in Srni, January 14–21, 1995.

ACTIVITIES IN 1994

International Symposium in Honour of Boltzmann's 150th Birthday

¿From February 23–26, 1994, ESI was a co–organizer of a symposium in honour of Boltzmann who was born 150 years ago. This was sponsored by AUA, BAWAG, CA, BMWF, etc. Apart from Schrödinger Boltzmann is considered to be the most outstanding physicist of Austria whose thinking still influences mathematics and physics.

International scientists of the highest rank participated in our meeting. On the first day the Creditanstalt offered a more festive atmosphere. Our purpose was to offer informative talks to international researchers as well as to the scientifically interested public of Vienna, and we believe that the symposium was well accepted and a real success. The following preprints are from talks of this symposium: [81], [83], [85], [95], [98], [125].

P. Schuster: *Die Prinzipien der biologischen Evolution und der Zweite Hauptsatz der Thermodynamik.*

Official Opening

W. Thirring: *Boltzmann's Legacy in the Thinking of Modern Physics*

J. Lebowitz: *Time Arrow and Boltzmann's Entropy*

T.D. Lee: *Vacuum as a Physical Medium (Relativistic Heavy Ion Collisions and the Boltzmann Equation)*

G. Gallavotti: *Ergodic Theory and Statistical Ensembles in Boltzmann's Work*

G.G. Emch: *Concepts from Statistical Mechanics in Relativity*

P. Schuster: *Statistics of Biopolymer Structures and the Boltzmann Distribution*

O.E. Lanford III: *Microscopic Mechanics, Probability and the Boltzmann Equation*

K. Schmidt: *Entropy for Mathematicians*

D. Szász: *Boltzmann's Ergodic Hypothesis, a Conjecture for Centuries?*

W. Stiller: *Ludwig Boltzmann und die Entwicklung der chemischen Kinetik*

H.A. Posch: *Numerische Simulation von Vielteilchensystemen im Gleichgewicht und Nichtgleichgewicht*

E. Oeser: *Boltzmann und die evolutionäre Erkenntnistheorie*

D. Flamm: *Leben und Werk Ludwig Boltzmanns*

R. Dobrushin: *A Mathematical Approach to Foundations of Statistical Mechanics*

G. Fasol: *The Boltzmann Equation and Its Limits in Solid State Physics*

A. Uhlmann: *Comparison of Probability Distributions*

Ergodicity in non-commutative algebras

Organized by Heide Narnhofer, Vienna. This activity produced 14 preprints up to now.

In the workshop on noncommutative ergodic theory our purpose was to transfer ideas of classical ergodic theory to dynamics of nonabelian algebras. We concentrated on the concepts of Lyapunov exponents and dynamical entropy.

In [103] we succeeded to find an appropriate definition for Lyapunov exponents for noncommutative algebras that provides the same consequences on the mixing behavior as in the classical case and does not depend on arbitrary choices.

For the dynamical theory for von Neumann algebras three definitions are now available (Connes-Stoermer-Narnhofer-Thirring, Alicki-Fannes, Voiculescu). They had to be compared and it turned out that they react very differently on commutativity properties [104,106,129,136]. Whether any of these dynamical entropies is related to Lyapunov exponents is at the moment not under control.

On the basis of C^* algebras a candidate for a topological dynamical entropy was proposed and examined in [93]. Also we examined the possibility to construct noncommutative systems with mixing dynamics. A natural possibility is to quantize classical Markov systems. But this quantization can be done in different ways. A comparison of these different possibilities with

respect to the corresponding dynamical entropy should be finished in due time (seminar talk of Park, Benatti, Kümmerer, Narnhofer, Werner).

Another possibility to construct algebras with mixing automorphisms is based on the imbedding theory of algebras, where with a kind of mirroring process the imbedding can be enlarged to an automorphism group. This imbedding finds its counterpart in bipartite graphs. An essential step forward was done in [115] to single out those graphs that correspond to an imbedding.

Up to now we concentrated on an automorphism that can be extended to an automorphism group Z. Generalizations to other groups were treated in [86,97,108,109].

An essential tool for explicit calculations of the entropy seems to be an appropriate characterization of the state space over the algebra. [102] concentrates on this problem. Further research by Petz and Michor and by Benatti, Narnhofer and Uhlmann is in progress.

Finally the theory of deterministic chaos was enlarged in [119] where the deterministic time evolution of quantum mechanics was combined with a probabilistic evolution representing quantum measurement in a consistent way.

We organized a number of seminars where every visitor was invited to represent his research field. Nevertheless stronger emphasis was put on informal discussions. Here the atmosphere of the Schrödinger Institute turned out to be very stimulating. As a result spontaneous cooperations were started. Of course, not all discussions succeeded in finding concrete results. Many ideas are waiting to be attacked and examined again. Therefore we are looking forward to continuing the research activities of the Schrödinger Institute.

H. Narnhofer

Mathematical relativity

Organized by P. Aichelburg, R. Beig, Vienna. 1 July – 15 September 1994. Conference: 25 – 29 July 1994. In this activity 11 preprints were produced in 1994.

The field of Classical General Relativity (G.R.) has recently seen a significant upward swing, both in the quality and the number of published results. There seem to be three main reasons for the current renaissance of classical G.R.

One is the refined observations of effects where general relativity is essential, such as the Hulse-Taylor pulsar or the prospect of direct experimental detection of gravitational waves. The most notable effort in the latter direction is the LIGO project in the US, the construction of a system of earth-bound Laser Interferometric Detectors — at present the largest project funded by NSF. The correct interpretation of experimental results requires a solid understanding of the underlying theory.

A second factor is that G.R. is "becoming of age" in the sense that the theory has reached a degree of maturity where many physically relevant questions can be given a rigorous mathematical formulation, typically at the geometry-analysis interface. There is moreover an increasing number of researchers with, not only a good command of the available mathematical machinery, but also the ability to further develop these techniques according to the requirements of the problems at hand.

A third element in the recent uprise of activity in Mathematical Relativity is that, with the power reached by current electronic computers, particularly when combined with insights coming from the analytical side, one can study problems which would have been considered out of reach a couple of years ago.

The Workshop on Mathematical Relativity which ran from 1 July through 15 September, set itself the task of studying global existence and uniqueness questions for the Einstein Equations (EE's).The Einstein Equations with reasonable matter sources form a system of partial differential equations which give rise to a well-defined initial-value problem. In the initial-value formulation the EE's split into two sets: the constraint equations, an elliptic system which determines the set of allowable initial data, i.e. the phase space of G.R. and the hyperbolic system of evolution equations. The singularity theorems of Penrose and Hawking show that solutions with large data are necessarily singular in the sense of having incomplete causal geodesics. A major (perhaps 'the') open question in classical G.R. concerns the precise nature of the singularities developed by the maximal solution to the Cauchy problem, e.g. whether the maximal

solution can be extended across a Cauchy horizon. That this should, for generic data, be impossible, is one version of the cosmic censorship conjecture. Another version states that, for many forms of matter, the maximal Cauchy evolution of asymptotically flat initial data will either approach flat spacetime or settle down to a stationary black hole state. For some matter sources one knows that these black hole states are characterized just by the gravitational mass, the angular momentum and the global charges of the matter sources ('no-hair property'). But recently Bartnik, McKinnon, Bizon and others have found non-abelian soliton-like and black hole solutions to the Einstein-Yang-Mills system which violate the above stated no-hair property. Since then such non-linear matter couplings to gravity have attracted much attention from physicists and mathematicians.The existence of regular non-abelian finite energy configurations in equilibrium with gravity results from a cancellation of gauge and gravitational singularities. This is a typical non-perturbative effect which shows that gravity can regularize divergences present in flat space theories. Another aspect is that the time development of perturbed soliton configurations may shed new light on the above mentioned cosmic censorship hypothesis. Furthermore, in the spherically symmetric case the static Einstein equations with non-linear field sources reduce to dynamical systems for which, it seems, modern methods of bifurcation and critical point theories may successfully be applied.

The work performed at the workshop concentrated on the following topics :

(1) Gravity coupled to nonlinear matter sources (Aichelburg, Bartnik, Bizon, Chmaj, Choptuik, Forgacs, Gibbons, Maison, Smoller, Straumann, Wald.)
(2) Black-Hole physics, No-Hair theorems (Chrusciel, Gibbons, Israel, Racz, Schmidt, Simon, Temple, Tod, Wald, Weinstein.)
(3) Constraint Equations and Hamiltonian Reduction: Andersson, Bartnik, Beig, Fischer, Hajicek, Iriondo, Isenberg, Malec, Moncrief, O Murchadha.)
(4) Evolution problems and Cosmic Censorship (Choptuik, Chrusciel, Friedrich, Hübner, Isenberg, Moncrief, Rein, Rendall.)

There were lively interactions between people working on these different topics and, whenever possible, with ESI visitors outside the Relativity program (examples: C.leBrun, N.S.Nadirashvili). Up until now 11 ESI preprints have resulted from the workshop, and there are more to come. The workshop culminated in a Conference on Mathematical Relativity from 25-30 July, which was attended by roughly 100 people, many of whom were from former communist countries.

Program of the conference, July 25–30:

Monday, 25 July

G. Gibbons: *Gravitating Solitons and Hairy Black Holes.*
R. Wald: *Classical Thermodynamics of Black Holes in Arbitrary Lagrangian Theories of Gravity Coupled to Matter.*
P. Chrusciel: *Strong Cosmic Censorship in Vacuum Spacetimes with Compact, Locally Homogeneous Cauchy Surfaces.*
N. O Murchadha: *Spherical Gravitational Collapse.*

Tuesday, 26 July

Y. Choquet-Bruhat: *Non-Abelian Relativistic Fluids.*
M. Choptuik: *Critical Phenomena in Gravitational Collapse.*
P. Brady: *Self-Similar Scalar Field Collapse: Naked Singularities and Critical Behavior.*
A. Rendall: *Crushing Singularities in Spacetimes with Spherical or Plane Symmetry.*
G. Rein: *On the Spherically Symmetric Vlasov-Einstein System.*

Wednesday, 27 July

R. Bartnik: *Solutions of the Einstein-Kaluza-Klein Equations.*
P. Bizon: *Gravitating Solitons and Hairy Black Holes.*
B. Temple: *An Astrophysical Shock-Wave Solution of the Einstein Equations Modeling an Explosion.*
H. Friedrich: *Boundary Conditions for Anti-de-Sitter Spacetimes.*
K. Newman: *The Structure of Conformal Singularities.*

Thursday, 28 July

W. Israel: *Effect on Radiative Wave Tails on Black Hole Interiors.*
D. Brill: *Testing Cosmic Censorship with Black Hole Collisions.*

H. Pfister: *Dirichlet Problem for the Stationary Einstein Equation with Applications to Stability Limits of Rotating Stars.*

N. Straumann: *On Einstein-Yang-Mills System for Arbitrary Gauge Groups.*

D. Maison: *Analytical and Numerical Methods for Einstein- Yang-Mills and Related systems.*

Friday, 29 July

V. Moncrief: *Analytical and Numerical Studies of Spacetime Singularities.*

A. Fischer: *Classical and Conformal Superspace.*

M. Iriondo: *Existence and Regularity of CMC Hypersurfaces in Asymptotically Flat Spacetimes.*

G. Weinstein: *N-Black Hole Stationary Axially Symmetric Solutions of the Einstein-Maxwell System.*

B. Schmidt: *The Newtonian Limit of Einstein's Equations of Gravity.*

P. Aichelburg, R. Beig.

Quaternionic and hyper Kähler manifolds,

A conference on quaternionic and hyper-Kähler manifolds was be organized in Trieste in the period September 5–9, 1994, by St. Marchiafava, S. Salamon, M. Pontecorve, and D. Alekseevsky; it was the precursor of this program.

This program ran from September to December 1994, and was organized by D. Alekseevsky and S. Salamon. 9 preprints were produced in 1994. The following persons participated:

Physicists: Ch. Devchand, E. Ivanov, O. Ogievetsky, V. Ogievetsky, A. Perelomov, A. Van Proeyen.

Mathematicians: D. Alekseevsky, F. Battaglia, E. Bonan, C. Boyer, V. Cortes, I. Dotti-Miatello, K. Galicki, G. Gentili, P. Kobak, C. LeBrun, S. Marchiafava, Y. Nagatomo, T. Nitta, H. Pedersen, P. Piccinni, F. Podestà, M. Pontecorvo, Y-S. Poon, S. Salamon, U. Semmelmann, A. Spiro, A. Swann, T. Taniguchi.

There were a number of younger participants, including Battaglia, Cortes, Devchand, Kobak, Nagatomo, Semmelmann, Swann, Taniguchi.

The main technical achievements are described below, and take into account (i) ESI preprints produced or in preparation, (ii) lectures given at ESI, and (iii) additional discussions or informal talks of relevant problems that are not covered by the preprint or lecture information. There is no doubt that the program was a great success in terms of the volume of work which it encouraged, and the on-going research advances that have been accomplished. The organizers wish to thank the Institute on behalf of all the participants.

Outline of work.

The problems for investigation fell under one of the following headings:

1. Four-dimensional Riemannian and conformal geometry. A quaternionic structure on a real 4-manifold is the same as an oriented conformal structure, and a Riemannian 4-manifold has two compatible quaternionic structures. Quaternionic geometry may thus be viewed as an extension of the 4-dimensional theory.

2. The geometry of quaternionic structures on higher-dimensional manifolds. This included studies of the various types of quaternionic manifolds and their associated twistor and other spaces. Work was done both on the construction of explicit classes of examples and on the general theory. Many classification issues remain open in eight and more dimensions, and this is likely to be a fruitful avenue for future research.

3. Quaternion-Kähler and hyper-Kähler structures in physics. The latter has provided independent approaches of great value to determining examples and their classification.

4. Other topics. This included work on areas not covered above but involving similar techniques.

1. Four-dimensional Riemannian and quaternionic geometry.

Preprints 156, 174, and in preparation: Riemannian 4-manifolds with two Hermitian structures (Kobak)

Lectures (dates are in the form day/month): 4-dimensional integrable systems (V. Ogievetsky) 11/10; Conformally invariant Einstein geometry (Pedersen) 17/10; Twistor spaces of 4-manifolds (Pontecorvo) 9/12; Symmetry of self-dual manifolds (Poon) 9/12;

Additional discussions: Hermitian structures on 4-manifolds (Kobak, Nurowski, Pontecorvo, Salamon); T^2-actions on selfdual 4-manifolds (Pontecorvo, Poon); Einstein metrics on 4-manifolds (Cortes, Alekseevsky, Marchiafava); Moduli spaces of hyper-complex structures on 4-manifolds (Alekseevsky, Boyer, Nitta)

2. The geometry of quaternionic structures on higher-dimensional manifolds

Preprints 138, 142, 148, 150, 154 and in preparation: The Betti numbers of 3-Sasakian manifolds (Galicki, Salamon); Quaternionic transformations of non-positive quaternion-Kähler manifolds Alekseevsky, Marchiafava); Hyper-complex manifolds foliated by Hopf surfaces (Pedersen, Poon, Swann); Infinitesimal Einstein-Weyl deformations (Pedersen, Swann); The isometry group of the homogeneous quaternion-Kähler manifolds (Alekseevsky, Cortes)

Lectures: On quaternion-Kähler manifolds, (LeBrun) 1/9; Weyl structures in quaternionic geometry (Piccinni) 16/9; Hyper-complex structures on solvable Lie groups (Dotti-Miatello) 28/9; Einstein metric and 3-Sasakian geometry (Galicki) 28/9; An explicit construction of hyper-Kähler metrics (Devchand) 12/10; Deformation of quaternionic structures (Nitta) 14/10; Hyper-Kähler manifolds associated to quaternion-Kähler manifolds (Swann) 17/10; Hyper-complex structures on Stiefel manifolds (Boyer) 19/10; Twistor construction for some Grassmann structures (Alekseevsky) 20/10; Decomposition of the exterior algebra of hyper-Kähler manifolds (Bonan) 23/11

Additional discussions: Invariant complex and hyper-complex structures on Lie groups (Dotti-Miatello, Salamon); torus actions on quaternion-Kähler manifolds, and divisors on twistor spaces and the classification of quaternionic structures (Battaglia, Pontecorvo, Poon)

3. Quaternion-Kähler and hyper-Kähler structures in physics.

Preprints 134, 153, and in preparation: Gap phenomena for quaternionic Yang-Mills connections (Taniguchi)

Lectures: Complex and quaternionic geometries in supersymmetry and self-duality, informal talk and discussion, (V. Ogievetsky) 11/10; Gap phenomena for quaternionic Yang-Mills connections (Taniguchi) 20/10; Harmonic space description of quaternionic manifolds (Ivanov) 27/10; Instantons on quaternion-Kähler manifolds (Nagatomo) 7/11; Holonomy groups and extended supersymmetry in topological Yang-Mills theory (O. Ogievetsky) 14/11

Additional discussions: Geometrical meaning and formulation of harmonic space description of hyper-Kähler and quaternion-Kähler manifolds and its generalizations (Alekseevsky, Devchand, Ivanov, V. Ogievetsky); Dimensional reduction of supergravity and the relationship between special quaternion-Kähler special Kähler and special Riemannian manifolds (informal talk by Van Proeyen); Lie group approach to the classification of homogeneous special Kähler manifolds (Alekseevsky, Cortes, Van Proeyen)

4. Other topics. Preprints in preparation: Homogeneous non compact Einstein 5-manifolds (Alekseevsky, Dotti-Miatello); Invariant Poisson structures on semisimple Lie groups and symplectic structures on Borel subalgebras, (Alekseevsky, Perelomov)

Lectures: Integrable systems of classical mechanics: integration of equations of motion (Perelomov) 18/10; Compact quotients of negatively curved manifolds with large isometry group (Podestà) 19/12.

Additional discussions: Kostant's generalization of the Borel-Weil theorem and its applications (informal talk by Nagatomo); Groups of automorphisms of CR structures (Alekseevsky and Spiro); Differential invariants of conformal and quaternionic structures (Alekseevsky, Slovak, Souček); Cohomology of cohomogeneity one compact manifolds (Alekseevsky, Losik); Relations between different diffeologies of some quotient spaces (Alekseevsky, Losik, Michor)

A few words about working at ESI. In spite of the relatively short time that it has been running, the Institute has managed to develop its own style and it has already acquired traditions which have positively influenced the scientific activities. It has become common practice for the scientists, also ones from different projects, to interact actively. This they do by participating in numerous seminars and improvised informal discussions which often bear fruit either during the stay itself or after the scientists have returned to their home institutions.

The technical side of ESI is well organised and efficiently managed, and any problems are settled with the minimum of fuss. As in other institutes of its type, visitors expect ready access to computer networks, and facilities are more than adequate to cope with the average number of visitors, and include an informative manual on the local system. The fact that the majority of both short and longer-term visitors are now housed in Hotel Kaiser Franz Josef encourages collaborations to continue in the evenings. The social life is quite active, and the proximity of the city centre makes it easy for ESI scientists to unwind and attend cultural events.

The open and warm atmosphere of the Institute is certainly influenced by the unique spirit and style of Vienna: a city of art and music, in which organization of work harmonizes with a relaxed way of life.

Dimitry Alekseevsky, Simon Salamon

Spinors, twistors and conformal invariants

Organized by A. Trautman, V. Soucek, H. Urbantke (local organizer). September and October 1994. 9 preprints were produced in 1994.

1. Organization. The activity was a joint project on two topics: Spinor fields and Dirac operators; Twistors and conformal invariants. The activity took place in September and October 1994. The main concentration of participants was achieved around the conference "Spinors, twistors and conformal invariants" organized at ESI during the week Sept 19 - Sept 23. The were 6 longer stays (2 stays for 8 weeks, 4 stays for 4 weeks) and 17 stays shorter than a month. The activity had a well balanced proportion of visitors coming from west and east.

There was another activity (Quaternionic and hyper-Kähler manifolds) organized at ESI during the same period, and there was a substantial interaction among participants of both activities. Lectures at the conference were attractive for participants of both activities, and the same was true for seminars of both activities as well. This made it possible to start a fruitful cooperation (e.g. on eigenvalues of Dirac operators on hyper-Kähler manifolds - A.Moroianu, U.Semmelmann; invariant operators on quaternionic and hypercomplex manifolds - D.Alekseevski, A.Čap, J.Slovák, V.Souček).

The organization of the conference was quite smooth due to very efficient work by the administration (Mr. Mario Springnagel, Ms. Hedwig Kroll, Ms. Lilla Hathanyi, Ms. E. Haffner); all practical problems concerning computer network were easily solved due to the very kind and efficient help of Andreas Čap. Sincere thanks are due to all of them.

2. The conference. There were 23 invited lectures and 8 shorter lectures. The main subjects discussed at the conference were the Penrose transform, conformal and CR invariants, Dirac operators and bounds on its lowest eigenvalues, twistor spaces and the twistor equation, deformations of twistor spaces, spinors and spinor fields in space-times, optical geometry, self-dual Yang-Mills fields and their relations to integrable systems.

The general impression felt from reactions of participants of the activity as well as from people coming to lectures was very positive. There were a lot of interesting lectures and several groups of people working in distinct but related fields (who usually do not meet) were brought together with a fruitful interaction coming as a result. The list of all speakers and titles of their talks is enclosed at the end.

3. Main topics discussed during the activity. There were several different topics, some of them more mathematical, other ones more in mathematical physics. The topics were not always very close to each other, but there was a substantial interaction among participants working on different topics.

(1) Invariants of conformal (more generally almost Hermitian symmetric) and CR structures: D. Alekseevski (quaternionic activity), T. Branson, J. Bureš, A. Čap, M. Eastwood, R. Graham, J. Slovák, V. Souček
(2) Optical geometry, CR-structures and the Kerr theorem, and related topics: R. Graham, J. Lewandowski, P. Nurowski, L. Mason, S. Salamon, A. Trautman, (P. Tod - by e-mail), H. Urbantke,

(3) Dirac operators and spin structures on manifolds: A. Trautman, M. Cahen, S. Gutt, W. Kopczynski, J. Rawnsley
(4) twistor spaces, deformation theory: M. Eastwood, S. Huggett, L. Mason, S. Merkulov, J. Rawnsley,
(5) The Penrose transform: T. Bailey, J. Bureš, M. Eastwood, L. Mason, V. Souček
(6) Dirac operator and twistor operator on Riemannian manifolds and its spectral properties: H. Baum, T. Friedrich, O. Hijazi, A. Moroianu, U. Semmelmann (quaternionic activity)

4. Preprints. The discussions and the work done during the activity has brought nice results; 9 preprints have already appeared in the ESI series: [135], [140], [148], [149], [158], [159], [172], [173], [186].

A broader project for the study of invariant operators on manifolds with almost Hermitian symmetric structures from the point of view of natural operators was started by A. Čap, J. Slovák and V. Souček. One preprint [186] of a longer series is already finished, several more are in preparation.

A. Trautman, V. Soucek, H. Urbantke

Gibbsian random fields

Organized by R. Dobrushin (Moscow). August – December 1994. The theory of Gibbsian fields is a quickly developing branch of science lying on the boundary between probability theory and statistical mechanics. The notion of Gibbsian random field having the origin in statistical mechanics turns out to be a very general way to describe random functions of many variables, and so found many applications in different sciences, including engineering, biology, and so on. Difficult mathematical problems arose in the study of properties of Gibbsian fields, especially in connection with the problem of phase transition.

For a longer period R. Dobrushin, S. Shlosman, O. Hryniv visited ESI, other scientists came for the workshop. The following preprints were produced in this activity: [125], [176], [179].

Seminar: On the Ising Model and Around it in Eight Days. October 17–24, 1994. Abstracts of all talks given are collected in preprint [183].

A. van Enter, Groningen: *Ill-defined renormalization group maps: some new results,*

A. Messager, Marseille: *The Falicov-Kimball model is an Ising model,*

R. Dobrushin, Vienna - Moscow: *Estimates of semi-invariants for the Ising model at low temperatures.*

R. Kotecky, Praha: *The staggered charge order phase of the extended Hubbard model in the atomic limit,*

R. Schonmann, Los Angeles: *A study of the metastable behavior of the Ising model in the joint limit of small h and T,* 1994 10 19

O. Hryniv, Vienna - Lviv: *Fluctuations of the 2D Ising model droplet around the Wulff shape,*

S. Shlosman, Vienna - Moscow - Irvine: *Restricted variational problem and the Ising model,*

Ch. Pfister, Lausanne: *Conditional Limit Theorems and Equivalence of Ensembles,*

M. Zahradnik, Praha: *Stratified Gibbs states of 3D Ising type models,*

E. Olivieri, Rome: *Ising model and renormalization group pathologies,*

Ch. Maes, Leuven: *Percolation techniques in disordered spin systems,*

R. Dobrushin

CONTINUATION OF 1993 PROGRAMS

The three programs of 1993 had a continuation on a smaller scale in 1994 in order to finish scientific activities which were started in these programs.

Two-dimensional quantum field theory

Organized by H. Grosse. 16 preprints were produced in 1994, namely [69], [71], [77], [79], [80], [82], [90], [91], [95], [105], [110], [113], [118], [121], [132], [143].

After the development of quantum mechanics the line spectra of atoms and molecules, the periodic system as well as macroscopic properties of condensed matter have been explained. Although the quantum mechanics of atoms and molecules is well understood, the many-body effects offer, on the contrary, new challenging problems. The most prominent recent examples are high Tc superconductivity materials as well as the recent discovered quantum Hall effect. (To both subjects a Nobel prize has been awarded). Models describing these phenomena have been dealt with in our program. Various properties of spin systems related to superconductivity have been analyzed. The new technique of almost solvable models has been applied. Within the description of the quantum Hall effect geometrical and analytical methods have to be combined. It was a great surprise, when it was first observed experimentally, that the Hall conductivity at low temperatures and at high magnetic fields shows flat plateaus in 2-dimensional structures at well-described values of the filling factor. Models explaining the so-called fractional effect are still under debate. The precision of the plateaus compares with the most accurate measurements in nature.

The third kind of models dealt with in that program describes conductivity along one-dimensional systems, so called quantum wires. There exist new experimental methods in semiconductor technology, which allow to prepare almost one dimensional structures. Within the new subject, which is called mesoscopic physics, a number of elder ideas of quantum mechanics have been experimentally verified. A number of new phenomena are expected to show up in the near future.

H. Grosse

Differential Geometry

Organized by Peter Michor.

Nearly half the available resources were devoted to invite D. Alekseevsky, who organized the program on quaternionic manifolds. Some East European Scientists were invited in order to help their research.

There was an intensive collaboration between Michor and M. Dubois-Violette (who visited only 1 week) on the Frölicher-Nijenhuis bracket and non-commutative geometry, see preprints [70], [111], [133]. Preprint [72] on Poisson structures on the cotangent bundle of a Lie group or a principal bundle and their reductions came out of a collaboration in 1993 at ESI, where some participants did not even know each other before coming to ESI, and it was ignited by a talk by A. Alekseev (preprint [33]). Preprint [73] is an important contribution, connected with the stay of Tudor Ratiu and J. Marsden, another preprint by them is in preparation. Shan Majid contributed preprints [120], [130], [131] on quantum geometry, and he had influence on the preprint [163]. Alekseevsky contributed preprints [72], [138], [150], and some more are in preparation. Izu Vaisman spent one month, worked mainly on Poisson manifolds, and contributed [122], [123]. Perelomov, who was invited jointly with H. Grosse, contributed [143]. D. Juriev spent one month and contributed [167], [170]. ¿From Timisoara I invited M. Craioveanu and M. Puta, who are working in some isolation in Rumania for 6 weeks each, and they contributed [164], [165], [177], and [178], on classical mechanics and Hamiltonian geometry. All together there were 29 preprints in this program.

P. Michor

Schrödinger Operators

Organized by T. Hoffmann-Ostenhof.

The activity in Schrödinger operators in 1994 was mainly the continuation of the 1993-program. It was more specialized in the sense that the problem of understanding Schrödinger

operators with magnetic fields was the central topic to which about half of the activity was devoted. Consideration of magnetic Hamiltonians lead to new and challenging problems and many of the questions which have been answered satisfactorily for operators without magnetic fields await still answers for the case with magnetic fields.

There were 15 visitors, 20 preprints were written, 10 of which are devoted to the magnetic case (preprint 71, 74, 75, 78, 155, 162, 180, 181, 182, 184). These works address problems in solid state physics (74, 155, 162), spectral theory (71, 75, 78, 180, 181) and properties of magnetic eigenfunctions (184).

The other work includes scattering theory (100, 139) spectral theory (124, 137) inverse spectral theory (151, 152, 161) and properties of solutions of Schrödinger operators (99). With some ideas stemming from Schrödinger operators techniques a problem in hydrodynamics was solved (160).

Perhaps I should mention the work of Hempel and Herbst on the Hamiltonians without potential but with special magnetic fields which give rise to spectral behavior typical for solids (band structure), (74 and 162). Fefferman and Seco considered the spin of a large atom in its ground state (137) and Nadirashvili et al consider the regularity of the zeros of solutions to Schrödinger equations (99).

There were many seminars given about various topics, I just want to mention two interesting seminars on Ginzburg Landau models by Loss and by Struwe as well as a seminar on resonances given by Agmon.

Finally I should remark that some of the preprints produced during the activity in 93 already appeared or are about to appear. For instance the seminal result of N. Nadirashvili (29) who proved a 115 year old conjecture of Lord Raleigh concerning the fundamental frequency of vibrating plates is about to appear in Archive of Rational Mathematics.

T. Hoffmann-Ostenhof.

List of preprints published in the preprint series

We try to keep track of the bibliographical data of the published versions of the preprints – this is incomplete and we are constantly updating it. Therefore we enclose the list of all preprints, not only those of 1994.

1993

1. V. A. Bunegina, A. L. Onishchik, *Two Families of Flag Supermanifolds*, Diff. Geom. Appl. **4**, 329–360.
2. G. Landi, G. Marmo, G. Vilasi, *An algebraic Approach to Integrability* (1993), 16 pp..
3. Peter C. Aichelburg, Piotr Bizon, *Magnetically Charged Black Holes and Their Stability* (1993), 18 pp..
4. Peter W. Michor, *Radon transform and curvature*, Proceeding of the conference 75 years of Radon transform, (S. Gindikin, P. Michor, eds.), International Press, Hongkong, 1994, pp. 3 pp. (to appear).
5. Janusz Grabowski, *Isomorphisms of the Jacobi and Poisson Brackets* (1993), 5 pp..
6. A. Cap, P. W. Michor, H. Schichl, *A Quantum Group like Structure on non Commutative 2-Tori*, Lett. Math. Phys. **28** (1993), 251–255.
7. D. V. Alekseevsky, Peter W. Michor, *Differential Geometry of $\mathfrak{g}$–Manifolds*, Diff. Geom. Appl., 33 pp. (to appear).
8. H. Grosse, W. Maderner, C. Reitberger, *Cyclic Cohomology for Massive 1+1d-Fermions and Virasoro Algebras*, J. of Math. Physics **34** (1993), 4469–4480.
9. A. M. Vinogradov, *From Symmetries of Partial Differential Equations towards the Secondary ('Quantized') Calculus*, J. Geom. Physics, 65 pp., Not available via anonymous FTP (to appear).
10. A. L. Onishchik, *On the Rigidity of Supergrassmannians*, Annals of Global Analysis and Geometry (1993), 361–372.
11. O. Gil-Medrano, P. W. Michor, *Pseudoriemannian Metrics on Spaces of Almost Hermitian Structures*, appeared as "Geodesics on Spaces of Almost Hermitian Structures", Israel J. Math., 12 p..
12. A. Borovick, S. Kulinich, V. Popkov, Yu. Strzhemechny, *A new class of completely solvable bi-Plane 2d Vertex Models* (1993), 36 pp., Not available via anonymous FTP.
13. A. Akhiezer, A. Borovick, V. Popkov, *Exactly solvable system of coupled nonlinear Schrödinger equations* (1993), 8 pp., Not available via anonymous FTP.
14. Karl-Henning Rehren, *On the Range of the Index of Subfactors* (1993), 9 pp..
15. Pierre Cartier, *Construction Combinatoire des Invariants de Vassiliev – Kontsevich des Nœds*, Comptes Rendus Acad. Sci., Paris, 10 pp., Not available via anonymous FTP (to appear).
16. Janusz Grabowski, *Poisson Lie groups and their relation to quantum groups* (1993), 9 pp..
17. J. Grabowski, G. Marmo, A. M. Perelomov, *Poisson structures: towards a classification*, to appear, Modern Physics Letters A (1993), 1719–1733.
18. P. Bizon, *Saddle points of stringy actions* (1993), 10 pp..
19. Yassen S. Stanev, *Classification of the local extensions of the chiral observable algebra in $SU(3)$ WZNW models* (1993), 18 pp..
20. Ludmil K. Hadjiivanov, *Quantum deformation of Bose parastatistics* (1993), 20 pp..
21. A. Alekseevsky, D. Alekseevsky, *Asystatic G-manifolds*, Proceedings of the conference on Differential Geometry and Topology, Alghero (F. Tricerri, ed.), pp. 21 pp. (to appear).
22. W. Maderner, H. Grosse, C. Reitberger, *On spin chains, charges, and anomalies*, Journal of Physics A: Mathematics, 9 pp. (to appear).
23. H. Grosse, P. Presnajder, *The Construction of Non-Commutative Manifolds Using Coherent States*, Letters of Math. Physics **28** (1993), 239–250.
24. D. Bernard, M. Gaudin, F. D. M. Haldane, V. Pasquier, *Yang-Baxter equations in long range interacting systems* (1993), 23 pp..

25. H. Grosse, E. Raschhofer, *Bethe-Ansatz Solution of a Modified SU(3)-XXZ–Model*, On three levels (A. Verbeure, M. Fannes, C. Maes, eds.), Plenum Publishing Corporation, New York, pp. 17 pp. (to appear).
26. J. Grabowski, *A Poisson-Lie group Structure on the Diffeomorphism Group of a Circle*, Letters of Math. Physics, 7 pp. (to appear).
27. R. Hempel, J. Laitenberger, *Schrödinger operators with strong local magnetic perturbations: existence of eigenvalues in gaps of the essential spectrum*, Proceedings of the conference: Mathematical results in quantum mechanics, Blossin 1993 (M. Demuth, P. Exner, H. Neidhardt, V. Zagrebnov, eds.), Series: Operator theory: advances and applications, Vol. 70, Birkhäuser, Basel, Boston, Berlin, 1994, pp. 13–18.
28. J. Grabowski, G. Landi, G. Marmo, G. Vilasi, *Generalized Reduction Procedure: Symplectic and Poisson Formalism*, Fortschritte der Physik/Progress in Physics **42, No. 5** (1994), 393–427.
29. Nikolai S. Nadirashvili, *Raleigh's conjecture on the principal frequency of the clamped plate*, Arch. Rat. Mech. (1994), 11 pp..
30. D. V. Alekseevsky, M. M. Graev, *Twistors and Cartan Connections* (1993), 14 pp..
31. V. N. Popov, *Magnetic and Superconductive States in the Repulsive Hubbard Model* (1993), 18 pp..
32. D. Burghelea, C. Constantinescu, *Cutting and Glueing Back along a Closed Simple Curve on a Riemann Surface* (1993), 20 pp., Not available via anonymous FTP.
33. A. Yu. Alekseev, I. T. Todorov, *Quadratic brackets from symplectic forms* (1993), 16 pp..
34. P. Furlan, Y. S. Stanev, I. T. Todorov, *Exchange relations and correlation functions for a quantum particle on the SU_2-group manifold* (1993), 15 pp..
35. M. Hoffmann-Ostenhof, T. Hoffmann-Ostenhof, H. Stremnitzer, *Local properties of Coulombic wave functions*, Comm. Math. Physics, 33 pp. (to appear).
36. M. Hoffmann-Ostenhof, T. Hoffmann-Ostenhof, N. Nadirashvili, *Regularity of the nodal sets of solutions to Schrödinger equations*, Proceedings of the conference: Mathematical results in quantum mechanics, Blossin 1993 (M. Demuth, P. Exner, H. Neidhardt, V. Zagrebnov, eds.), Series: Operator theory: advances and applications, Vol. 70, Birkhäuser, Basel, Boston, Berlin, 1994, pp. 19–25.
37. J. F. Glazebrook, F. W. Kamber, *Secondary invariants and chiral anomalies of basic Dirac families*, Diff. Geom. Appl., 14 pp. (to appear).
38. Mark Losik, *Categorical differential geometry*, Cahier Topol. Geom. Diff. Categor., 16 pp. (to appear).
39. D. V. Alekseevsky, P. W. Michor, *Differential geometry of Cartan connections* (1993), 23 pp..
40. G. Landi, G. Marmo, G. Vilasi, *Recursion Operators: Meaning and Existence for Completely Integrable Systems*, J. Math. Physics (1994), 808–815.
41. Rudolf Schmid, *A solution of the BRST Consistency Condition and g–symplectic orbits* (1993), 11 pp..
42. Heinz Siedentop, *Bound for the atomic ground state density at the nucleus* (1993), 6 pp..
43. R. Hempel, J. Voigt, *The spectrum of Schrödinger operators in $L_p(R^d)$ and $C_0(R^d)$*, Proceedings of the conference: Mathematical results in quantum mechanics, Blossin 1993 (M. Demuth, P. Exner, H. Neidhardt, V. Zagrebnov, eds.), Series: Operator theory: advances and applications, Vol. 70, Birkhäuser, Basel, Boston, Berlin, 1994, pp. 63–72.
44. D. Burghelea, L. Friedlander, T. Kappler, *Asymptotic Expansion of the Witten deformation of the analytic torsion* (1993), 38 pp..
45. H. Grosse, P. Prešnajder, M. Chaichian,, *Unitary Realizations of the q-Oszillator Algebra*, Jour. of Physics A: Mathematics, 11 pp. (to appear).
46. F. Lizzi, G. Marmo, G. Sparano, A. M. Vinogradov, *Eikonal type equations for geometric singularities of solutions in field theory* (1993), 27 pp..
47. I. S. Krasil'shchik, *Lie algebra structures for symmetries of differential equations possessing recursion operators* (1993), 14 pp..
48. I. S. Krasil'shchik, *An algebraic model for characteristics of differential equations* (1993), 15 pp..
49. I. Vaisman, *Second order hamiltonian vector fields on tangent bundles* (1993), 18 pp..

50. Ivan Penkov and Vera Serganova, *Generic Irreducible Representations of Finite-Dimensional Lie Superalgebras* (1993), 30 pp..
51. V.Lychagin, *Quantizations of braided differential operators* (1993), 11 pp..
52. I. T. Todorov, *What are we learning from 2-dimensional conformal models?* (1993), 21 pp..
53. I. Z. Golubchik, V. V. Sokolov, S. I. Svinolupov, *A new class of nonassociative algebras and a generalized factorization method* (1993), 11 pp..
54. A. V. Bocharov, V. V. Sokolov, S. I. Svinolupov, *On Some Equivalence Problems for Differential Equations* (1993), 12 pp..
55. V. N. Chetverikov, *Invertible linear differential operators on two-dimensional manifolds* (1993), 16 pp..
56. A. Cap, J. Slovak, *On multilinear operators commuting with Lie derivatives* (1993), 29 pp..
57. H. Grosse, V. N. Popov, *On the relation between spin systems and fermion systems*, Phys. Lett. A, 6 pp. (to appear).
58. Harald Grosse, Walter Maderner, *On the classical origin of the fermionic Schwinger term*, Lett. Math. Phys. **31** (1994), 57–63.
59. Harald Grosse, Walter Maderner, Christian Reitberger, *Can anomalies melt?*, Proc. of the Int. Symposium on "Generalized Symmetries in Physics" (H.–D. Doebner, V. Dobrev, A. Ushvericke, eds.), World Scientific, pp. 14 pp. (to appear).
60. J. Dereziński, C. Gerard, *Chapter 3: Quantum time dependent 2-body Hamiltonians*, Asymptotic Completeness of N-particle systems, pp. 85 pp. (to appear).
61. V. Lychagin, *Braidings and Quantizations over bialgebras* (1993), 23 pp..
62. B. Thaller, *A criterion for essential self-adjointness* (1993), 11 pp..
63. D. Yafaev, *Eigenfunctions of the continuous spectrum for the N-particle Schrödinger operator* (1993), 27 pp..
64. P. Kargaev, E. Korotyaev, *Effective masses and conformal mappings*, Comm. Math. Phys., 32 pp. (to appear).
65. Ronald G. Douglas, James F. Glazebrook, Franz Kamber, Guoliang Yu, *Index formulas for geometric Dirac operators in Riemannian Foliations* (1993), 28 pp..
66. Andrei Borowick, Gaetano Vilasi, *Invariant endomorphism and complete integrability of a dissipative multicomponent Burgers model* (1993), 11 pp..
67. S. Vugalter, *Limits on stability of positive molecular ions in a homogeneous magnetic field*, Comm. Math. Phys., 23 pp. (to appear).

1994

68. Martin Markl, Steve Shnider, *Drinfel'd algebra deformations and the associahedra* (1994), 6 pp..
69. L. Pittner, P. Uray, *Duals of quasitriangular $\mathbb{Z}_2$-graded Hopf algebras and the classical limit* (1994), 24 pp..
70. Michel Dubois-Violette, Peter W. Michor, *A common generalization of the Frölicher-Nijenhuis bracket and the Schouten bracket for symmetric multi vector fields*, Indagationes Math. (1994), 15 pp. (to appear).
71. H. Grosse, J. Stubbe, *Splitting of Landau levels in the presence of external potentials* (1994), 9 pp..
72. D. V. Alekseevsky, J. Grabowski, G. Marmo, P. W. Michor, *Poisson structures on the cotangent bundle of a Lie group or a principal bundle and their reductions*, J. Math. Physics, 21 pp. (to appear).
73. Anthony Bloch, P. S. Krishnaprasad, Jerrold E. Marsden, Tudor S. Ratiu, *The Euler-Poincaré Equations and Double Bracket Dissipation* (1994), 45 pp..
74. Rainer Hempel, Ira Herbst, *Strong magnetic fields, Dirichlet boundaries and spectral gaps* (1994), 28 pp..
75. László Erdős, *Magnetic Lieb-Thirring inequalities* (1994), 41 pp..
76. S. Twareque Ali, Amine M. El Gradechi, Gérard G. Emch, *Modular algebras in geometric quantization* (1994), 29 pp..

77. C. Malyshev, V. N. Popov, *Three-band Hubbard model and high temperature superconductivity* (1994), 29 pp., Not available via anonymous FTP.
78. S. A. Vugalter, G. M. Zhislin, *On the extremal properties of the resonances for two particles systems in magnetic field* (1994), 20 pp..
79. Anton Yu. Alekseev, Harald Grosse, Volker Schomerus, *Combinatorial Quantization of the Hamiltonian Chern-Simons Theory* (1994), 43 pp..
80. Anton Yu. Alekseev, A. Z. Malkin, *Symplectic geometry of the Chern-Simons theory* (1994), 20 pp..
81. Giovanni Gallavotti, *Ergodicity, ensembles, irreversibility in Boltzmann and beyond* (1994), 11 pp..
82. H. Grosse, P. Presnajder, *The Dirac operator on the fuzzy sphere* (1994), 15 pp..
83. W. Thirring, *Boltzmann's Legacy in the Thinking of Modern Physics* (1994), 18 pp., Not available via anonymous FTP.
84. Piotr Bizoń, *Gravitating solitons and hairy black holes* (1994), 28 pp..
85. T. D. Lee, *Vacuum as a physical medium (Relativistic heavy ion collisions and the Boltzmann equations)* (1994), 28 pp., Not available via anonymous FTP.
86. Sergey I. Bezuglyi, *H-cocycles and actions of group extensions* (1994), 17 pp..
87. Peter W. Michor, *Basic Differential Forms for Actions of Lie Groups*, Proc. of the AMS, 10 pp. (to appear).
88. Editor: Thomas Hoffmann-Ostenhof, *Collection of Abstracts of all Lectures given at the Workshop on Schrödinger Operators, Vienna, December 8–12, 1993* (1994), 36 pp..
89. Ph. A. Martin, G. Nenciu, *Semi-classical inelastic S-matrix for one-dimensional N-states systems* (1994), 59 pp., Not available via anonymous FTP.
90. Krzysztof Gawędzki, *Coulomb gas representation of the SU(2) WZW correlators at higher genera* (1994), 9 pp..
91. H. Grosse, S. Pallua, M. Prester, E. Raschhofer, *On a quantum group invariant spin chain with non-local boundary conditions*, Jour. of Physics A: Mathematics, 16 pp. (to appear).
92. V. M. Tkachuk, *The Supersymmetry Representation for Correlation Functions of Disordered Systems* (1994), 12 pp..
93. T. Hudetz, *Topological Entropy for Appropriately Approximated C^*–Algebras* (1994), 51 pp..
94. *Biographical and Historical Talks given at the International Symposium in honor of Ludwig Boltzmann's 150th Birthday, Vienna, February 24–26, 1994* (1994), 33 pp., Not available via anonymous FTP.
95. Yassen S. Stanev, *Classification of the local extensions of the SU(2)xSU(2) chiral current algebras* (1994), 15 pp..
96. T. Bröcker, R. F. Werner, *Mixed states with positive Wigner functions* (1994), 19 pp., Not available via anonymous FTP.
97. Valentin Ya. Golodets, Alexander M. Sokhet, *Cocycles of type III transformation group and AT property for the double Mackey action* (1994), 39 pp., Not available via anonymous FTP.
98. Domokos Szasz, *Boltzmann's Ergodic Hypothesis, a Conjecture for Centuries?* (1994), 25 pp., Not available via anonymous FTP.
99. M. Hoffmann-Ostenhof, T. Hoffmann-Ostenhof, N. Nadirashvili, *Interior Hölder estimates for solutions of Schrödinger equations and the regularity of nodal sets* (1994), 33 pp..
100. M. Sh. Birman, D. R. Yafaev, *Scattering matrix for a perturbation of a periodic Schrödinger operator by a decaying potential* (1994), 26 pp..
101. W. Thirring, *Stability of Matter* (1994), 15 pp., Not available via anonymous FTP.
102. Armin Uhlmann, *Spheres and Hemispheres as Quantum State Spaces* (1994), 18 pp..
103. G. G. Emch, H. Narnhofer, W. Thirring, G. L. Sewell, *Anosov Actions on Non–commutative Algebras* (1994), 22 pp..
104. F. Benatti, H. Narnhofer, *Strong Clustering in Type III Entropic K–Systems* (1994), 30 pp..
105. H. Grosse, *Quasifree Second Quantization and Its Relation to Noncommutative Geometry* (1994), 8 pp..

106. R. Alicki, H. Narnhofer, *Comparison of Dynamical Entropies for the Noncommutative Shifts* (1994), 8 pp..
107. Peter W. Michor, Cornelia Vizman, *N–transitivity of Certain Diffeomorphism Groups* (1994), 9 pp..
108. V. Ya. Golodets, *Approximately Transitive Actions of Abelian Groups and Spectrum* (1994), 14 pp..
109. Sergey I. Bezuglyi, Valentin Ya. Golodets, *Dynamical Entropy for Z^n–actions and Bogoliubov Automorphisms of the CAR–algebra* (1994), 21 pp..
110. E. Langmann, G. W. Semenoff, *QCD_{1+1} with Massless Quarks and Gauge Covariant Sugawara Construction* (1994), 11 pp..
111. M. Dubois–Violette, P. W. Michor, *Dérivations et calcul différentiel non commutatif II*, C. R. Acad. Sci. Paris, Série I **319** (1994), 927–931.
112. Max Karoubi, *Formes Topologiques Non Commutatives* (1994), 18 pp..
113. Anton Yu. Alekseev, Harald Grosse, Volker Schomerus, *Combinatorial Quantization of the Hamiltonian Chern–Simons Theory II* (1994), 51 pp..
114. Piotr Bizon, *Harmonic maps between three-spheres* (1994), 19 pp..
115. Sorin Popa, *An Axiomatization of the Lattice of Higher Relative Commutants of a Subfactor* (1994), 18 pp., Not available via anonymous FTP.
116. Mark V. Losik, *The Cohomology of the Complex of G–Invariant Forms on G–Manifolds*, Ann. Global Anal. Geom., 17 pp. (to appear).
117. P. Forgács, Z. Horváth, P.A. Horváthy, *Bogomolny–type Equations for Gravitating Gauged Sigma Models* (1994), 11 pp..
118. Edwin Langmann, Jouko Mickelsson, *(3+1)–Dimensional Schwinger Terms and Non–commutative Geometry* (1994), 13 pp..
119. A. Jadczyk, *On Quantum Jumps, Events and Spontaneous Localization Models* (1994), 18 pp..
120. Shahn Majid, *q–Epsilon Tensor for Quantum and Braided Spaces* (1994), 24 pp..
121. Yassen S. Stanev, Ivan T. Todorov, *On Schwarz Problem for the $\widehat{su}_2$ Knizhnik–Zamolodchikov Equation* (1994), 11 pp..
122. Izu Vaisman, *Super–Geometric Quantization*, Acta Math. Univ. Comenianae, 15 pp. (to appear).
123. Izu Vaisman, *A Lecture on Poisson–Nijenhuis Structures* (1994), 16 pp..
124. J.–M. Combes, P. D. Hislop, E. Mourre, *Spectral Averaging, Perturbation of Singular Spectrum, and Localization* (1994), 20 pp..
125. R. L. Dobrushin, *Estimates of Semiinvariants for the Ising Model at Low Temperatures* (1994), 22 pp..
126. R. Beig, S. Husa, *Initial Data with Toroidal Conformal Symmetry* (1994), 9 pp..
127. I. P. Pavlotsky, G. Vilasi, *Some Peculiar Properties of the Relativistic Oscillator in the Postgalilean Approximation* (1994), 15 pp..
128. A. V. Bobylev, G. Vilasi, *Projective Invariance for Classical and Quantum Systems* (1994), 14 pp..
129. Heide Narnhofer, Erling Størmer, Walter Thirring, *C^*–dynamical systems for which the tensor product formula for entropy fails* (1994), 10 pp..
130. Shahn Majid, *$*$–Structures on Braided Spaces* (1994), 19 pp..
131. Shahn Majid, *Duality Principle and Braided Geometry* (1994), 23 pp..
132. Karl–Henning Rehren, Yassen S. Stanev, Ivan T. Todorov, *Characterizing Invariants for Local Extensions of Current Algebras* (1994), 30 pp..
133. Michel Dubois–Violette, Peter W. Michor, *The Frölicher–Nijenhuis Bracket for Derivation Based Non–Commutative Differential Forms* (1994), 28 pp..
134. Ch. Devchand, V. Ogievetsky, *Self–dual Gravity Revisited* (1994), 20 pp..
135. Paweł Nurowski, *Optical Geometries and Related Structures* (1994), 19 pp..
136. Heide Narnhofer, Walter Thirring, *C^* Dynamical Systems that Assymptotically are Highly Anticommutative* (1994), 11 pp..
137. Charles L. Fefferman, Luis A. Seco, *The Spin of the Ground State of an Atom*, Revista Matematica Ibero-Americana (1994), 18 pp..

138. Dimitry V. Alekseevsky, Stefano Marchiafava, *Gradient Quaternionic Vector Fields and a Characterization of the Quaternionic Projective Space* (1994), 8 pp..
139. B. Pavlov, *Zero Index of Pair of Projectors andi Expansions by Resonance States for Operators with Band Spectrum* (1994), 29 pp..
140. Wojciech Kopczyński, *Pure Spinors in Odd Dimensions* (1994), 11 pp..
141. Piotr T. Chruściel, Robert M. Wald, *On the Topology of Stationary Black Holes*, Classical and Quantum Gravity, 7 pp. (to appear).
142. Liviu Ornea, Paolo Piccinni, *Locally Conformal Kähler Structures in Quaternionic Geometry* (1994), 17 pp..
143. V.M. Buchstaber, A.M. Perelomov, *On the Functional Equation Related to the Quantum Three–Body Problem* (1994), 24 pp..
144. Editors: P.C. Aichelburg, R. Beig, *Collection of Abstracts of All Lectures Given at the Workshop on Mathematical Relativity, Vienna, July 25 - 29, 1994* (1994), 16 pp..
145. Daniel J. Rudolph, Klaus Schmidt, *Almost Block Independence and Bernoullicity of $\mathbb{Z}^d$–Actions by Automorphisms of Compact Abelian Groups* (1994), 31 pp..
146. S. Yokura, *A Generalized Baum–Fulton–MacPherson's Riemann–Roch* (1994), 25 pp., Not available via anonymous FTP.
147. Gerhard Rein, *Cosmological Solutions of the Vlasov–Einstein System with Spherical, Plane, and Hyperbolic Symmetry* (1994), 32 pp..
148. Andrei Moroianu, Uwe Semmelmann, *Kählerian Killing Spinors, Complex Contact Structures and Twistor Spaces* (1994), 6 pp..
149. Andrzej Trautman, *The Dirac Operator on Pin Manifolds* (1994), 19 pp..
150. Dimitry V. Alekseevsky, Stefano Marchiafava, *Quaternionic Transformations and the First Eigenvalues of Laplacian on a Quaternionic Kähler Manifold* (1994), 8 pp..
151. P. Kargaev, E. Korotyaev, *The Inverse Problem for Hill Operator, the Direct Approach* (1994), 23 pp..
152. Evgeni Korotyaev, *The Propagation of the Waves in Periodic Media at Large Time* (1994), 23 pp..
153. Chand Devchand, Viktor Ogievetsky, *Four Dimensional Integrable Theories* (1994), 11 pp..
154. Charles P. Boyer, Krzysztof Galicki, Benjamin M. Mann, *On Strongly Inhomogeneous Einstein Manifolds* (1994), 8 pp..
155. J.M. Combes, P.D. Hislop, *Landau Hamiltonians with Random Potentials: Localization and the Density of States* (1994), 31 pp..
156. Claude LeBrun, Shin Nayatani, Takashi Nitta, *Self–Dual Manifolds with Positive Ricci Curvature* (1994), 17 pp..
157. Piotr T. Chruściel, Alan D. Rendall, *Strong Cosmic Censorship in Vacuum Space–Times with Compact, Locally Homogeneous Cauchy Surfaces* (1994), 38 pp..
158. Sergey A. Merkulov, *Twistor Theory, Complex Homogeneous Manifolds and G–Structures* (1994), 9 pp..
159. Abhay Ashtekar, Jerzy Lewandowski, *Projective Techniques and Functional Integration for Gauge Theories* (1994), 36 pp..
160. Eric A. Carlen, Michael Loss, *Optimal Smoothing and Decay Estimates for Viscously Damped Conservation Laws, with Application to the 2–D Navier Stokes Equation* (1994), 26 pp..
161. Evgeni Korotyaev, *The Second Order Estimates for the Hill Operator* (1994), 10 pp..
162. Rainer Hempel, Ira Herbst, *Bands and Gaps for Periodic Magnetic Hamiltonians* (1994), 11 pp..
163. Andreas Cap, Hermann Schichl, Jiří Vanžura, *On Twisted Tensor Products of Algebras* (1994), 22 pp..
164. Mircea Craioveanu, Mircea Puta, *On the Rigid Body with Two Linear Controls* (1994), 7 pp..
165. Mircea Puta, *On an Extension of the 3–Dimensional Toda Lattice* (1994), 9 pp..
166. Grigorii Zhislin, *Location of the Essential Spectrum of the Energy Operators of the Quantum Systems with Nonincreasing Magnetic Field* (1994), 16 pp..

167. Denis V. Juriev, *On the Dynamics of Noncanonically Coupled Oscillators and its Hidden Superstructure* (1994), 10 pp..
168. István Rácz, *On Einstein's Equations for Spacetimes Admitting a Non–Null Killing Field* (1994), 23 pp..
169. R. Beig, N. Ó Murchadha, *The Momentum Constraints of General Relativity and Spatial Conformal Isometries* (1994), 17 pp..
170. Denis V. Juriev, *Symmetric Designs on Lie Algebras and Interactions of Hamiltonian Systems* (1994), 5 pp..
171. Gilbert Weinstein, *N–Black Hole Stationary and Axially Symmetric Solutions of the Einstein–Maxwell Equations* (1994), 31 pp..
172. Abhay Ashtekar, Jerzy Lewandowski, Donald Marolf, José Mourão, Thomas Thiemann, *Coherent State Transforms for Spaces of Connections* (1994), 38 pp..
173. Abhay Ashtekar, Jerzy Lewandowski, *Differential Geometry on the Space of Connections via Graphs and Projective Limits* (1994), 69 pp..
174. Massimiliano Pontecorvo, *On the Existence of Compact Scalar–Flat Kähler Surfaces* (1994), 15 pp..
175. Mark V. Losik, *A Note on the Cohomology of the Complex of G–Invariant Forms on G–Manifolds* (1994), 9 pp..
176. R. Dobrushin, O. Hryniv, *Fluctuations of Shapes of Large Areas Under Paths of Random Walks* (1994), 40 pp..
177. Mircea Puta, *The Completeness of some Hamiltonian Vector Fields on a Poisson Manifold* (1994), 4 pp..
178. Mircea Puta, *Three–Dimensional Real–Valued Maxwell–Bloch Equations with Controls* (1994), 16 pp..
179. R. L. Dobrushin, *A Mathematical Approach to Foundations of Statistical Mechanics* (1994), 15 pp..
180. A.V. Sobolev, *Discrete Spectrum Asymptotics for the Schrödinger Operator with a Singular Potential and a Magnetic Field* (1994), 42 pp..
181. Simeon Vugalter, *Discrete Spectrum of a Three Particle Schrödinger Operator with a Homogoeneous Magnetic Field* (1994), 17 pp..
182. Simeon Vugalter, *Absence of the Efimov Effect in a Homogenous Magnetic Field* (1994), 18 pp..
183. Editor: R.L. Dobrushin, *Collection of Abstracts of Lectures given at the Seminar "On the Ising Model and Around it" Erwin Schrödinger Institute, Vienna October 17–24, 1994* (1994), 12 pp..
184. László Erdős, *Gaussian Decay of the Magnetic Eigenfunctions* (1994), 22 pp..
185. P. Hájíček, *Group Quantization of Parametrized Systems. I. Time Levels* (1994), 35 pp..
186. Andreas Čap, Jan Slovák, Vladimír Souček, *Invariant Operators on Manifolds with Almost Hermitian Symmetric Structures, I. Invariant Differentiation* (1994), 31 pp..

List of all visitors in the year 1994

Agmon, Shmuel, The Hebrew University, Jerusalem, Israel, agmon@cs.huji.ac.il, Schrödinger Operators and Related Topics, 1994 10 24-1994 11 07; invited by T. Hoffmann-Ostenhof,

Alekseev, Anton, Russia, University of Uppsala, Institute of Theoretical Physics, Box 803, 75108 Uppsala, Sweden, Falhagsleden 2B, Uppsala, Sweden, Low Dimensional Field Theory, Symplectic Geometry, 1994 02 22-1994 03 15; invited by H. Grosse,

Alexeevski, Dmitri, Russia, Center "Sophus Lie", Krasnokazarmennaya 6, Moscow, Russia, Differential Geometry, 1994 09 12-1994 12 30; invited by P. Michor,

Alicki, Robert, Poland, University of Gdansk, Institute of Theoretical Physics, 80-952 Gdansk, Poland, Quantum Dynamical Systems, 1994 05 16-1994 05 29; invited by H. Narnhofer,

Andersson, Lars, Sweden, Royal Institute of Technology, Department of Mathematics, S-10044 Stockholm, larsa@math.kth.se, Relativity, 1994 07 05-1994 08 03; invited by P.

Aichelburg, R. Beig,

Anosov, Dmitri, Russia, Steklov Mathematic Insitute, Vavilov Str. 42, Moscow Russia, anosov@de.mian.su, Smooth Dynamical System, 1994 10 27; invited by W. Thirring,

Ashbaugh, Mark S., University of Missouri, Department of Mathematics, Columbia MO 65211 USA, 1100 Lakeshore Drive, Schrödinger Operators, 1994 05 18-1994 06 16; invited by T. Hoffmann-Ostenhof,

Bailey, Toby, University of Edinburgh, Dept. of Mathematics, The King's Buildings, Edinburgh EH9 3SZ, Scotland, tnb@mathematics.edinburgh.ac.uk, Twistor Theory, 1994 09 16-1994 10 02; invited by V. Soucek, A. Trautmann,

Bartnik, Robert, University of New England, Department of Mathematics, Armidale NSW 2357, Australia, robb@neumann.une.edu.au, General Relativity, 1994 07 24-1994 09 05; invited by P. Aichelburg, R. Beig,

Battaglia, Fiammetta, Dipartimento di Matematica Applicate, Via S. Marta 3, I-50139 Firenze, fiamma@ingfi1.ing.unifi.it, Differential Geometry, 1994 12 05-1994 12 11; invited by D. Alekseevsky, S. Salamon,

Baum, Helga, Humboldt University, Department of Mathematics, Ziegelstr. 13A, D-10099 Berlin, baum@mathematik.hu-berlin.de, Differential Geometry, 1994 09 18-1994 10 01; invited by V. Soucek, A. Trautmann,

Benatti, Fabio, University of Trieste, Department of Theoretical Physics, Trieste 34100, Italy, benatti@trieste.inrn.it, Quantum Ergodic Theory, 1994 03 01-1994 03 26; 1994 05 01-1994 05 30; 1994 12 15-1994 12 17; invited by H. Narnhofer,

Bezuglyi, Sergey, Institute for Low Temperature Physics and Engineering, 47 Lenin av., 310164 Kharkov Ucraine, Ergodic Theory, 1994 02 23 - 1994 03 31; 1994 05 01 - 1994 06 30; invited by H. Narnhofer,

Bisch, Dietmar, HC Berkeley, Berkeley, CA 94720, Ergodicity in Non-Commutative Algebras, 1994 06 15 - 1994 06 22; invited by H. Narnhofer,

Bizon, Piotr, Jagellonian University, Cracow, Poland, General Relativity, 1994 06 08-1994 09 15; invited by P. Aichelburg, R. Beig,

Bonan, Edmond, Universite de Picardie, 33, Rue Saint Leu, Amiens, France, bonan@crihan.fr, Differential Geometry, 1994 11 01-1994 11 30; invited by D. Alekseevsky, S. Salamon,

Borel, Armand, IAS, Princeton, USA 1994 07 01-1994 07 02; invited by P. Michor,

Boyer, Charles P., University of New Mexico, Dept. of Mathematics, Albuquerque, N.M. 87131, cboyer@deepthought.unm.edu, Quaternionic Geometry, 1994 10 10-1994 10 21; invited by D. Alekseevsky, S. Salamon,

Branson, Thomas, University of Iowa, Iowa City IA 52242 USA, branson@blue.weeg.uiowa.edu, Conformally Invariant Operators, 1994 09 16-1994 09 26; invited by V. Soucek, A. Trautmann,

Bureš, Jarolim, Charles University, Mathematical Institute, Sokolovská 83, 18600 Prague 8, Czech Republic, jbures@karlin.mff.cuni.cz, Spinors, Twistors and Invariant Operators, 1994 09 05-1994 10 02; invited by V. Soucek, A. Trautmann,

Cherniha, Roman, Institute of Mathematics, 3 Tereshchenkivs'ka str., Kyiv 4, Ucraine, mathkiev@sovam.com, Symmetry Analysis, Exact Solutions of non-linear Partial Diff.Eqs., 1994 10 05-1994 10 31; invited by W. Thirring,

Chmaj, Tadeusz, N. Copernicus Astronomical Center, III. Astrophysical Lab., Krakow Poland, chmaj@ztc386a.if.uj.edu.pl, Mathematical and Numerical Relativity, 1994 07 10-1994 07 29; invited by P. Aichelburg, R. Beig,

Choptuik, Matthew W., University of Texas at Austin, Center for Relativity, Department of Mathematics, Austin TX 78712 USA, matt@godel.ph.utexas.edu, Mathematical Relativity, 1994 07 07-1994 07 17; 1994 07 24-1994 07 27; 1994 08 01-1994 08 03; invited by P. Aichelburg, R. Beig,

Chrusciel, Piotr, University of Tours, Dep. de Mathematiques, Faculte des Sciences, Parc de Grandmont, F-37200 Tours, chrusciel@univ-tours.fr, General Relativity, Mathematical Relativity, 1994 07 04-1994 08 15; 1994 11 16-1994 11 26; invited by P. Aichelburg, R. Beig,

Combes, Jean Michel, University of Toulon, 83130 La Garde France, 4 Moulin, 83390 Pienefen du Var France, Mathematical Physics, Schrödinger Operators, 1994 05 15-1994 05 28; invited by T. Hoffmann-Ostenhof,

Cortés, Vicente, Universität Bonn, Mathematisches Institut, V.Cortes@uni-bonn.de, Quaternionc Kähler Manifolds, 1994 12 01-1994 12 15; invited by D. Alekseevsky, S. Salamon,

Craioveanu, Mircea, University of Timişoara, Dept. of Mathematics, Bvd. Pãrvan 4, 1900 Timişoara, Romania, Differential Geometry, 1994 11 02-1994 12 15; invited by P. Michor,

Dahl, Mattias, Royal Institute of Technology, Department of Mathematics, S-10044 Stockholm, dahl@math.kth.se, Mathematical Relativity, 1994 07 04-1994 08 03; invited by P. Aichelburg, R. Beig,

Devchand, Chand, LTPH, JINR, 141980 Dubna near Moscow, Russia, Quarternionic Manifolds, 1994 09 12-1994 10 22; invited by D. Alekseevsky, S. Salamon,

Dietz, Klaus, Universität Bonn, Nussallee 12, Bonn D-53115, QFT, Quantenoptik, 1994 03 13-1994 03 17; invited by H. Grosse,

Dobrushin, Roland, Institute for Problems of Information Transmission, Ermolovoy 19, 103051 Moscow Russia, dobr@ippi.msk.su, Statistical Mechanics, 1994 02 14-1994 02 28; 1994 08 04-1994 12 31; invited by W. Thirring,

Dorfman, Iacob Robert, University of Maryland, College Park Maryland 20942 USA, jrd@ipst.umd.edu, Statistical Mechanics, 1994 03 23-1994 03 27; invited by H. Narnhofer,

Dotti Miatello, Isabel, FaMAF-Ciudad Universitariar, 5000 Córdoba, Argentina, idotti%mafcor@uunet.uu.net, Geometry of Homogeneous Spaces, 1994 09 19-1994 10 07; invited by D. Alekseevsky, S. Salamon,

Dubois-Violette, Michel, Universite Paris XI, L.P.T.H.E. Bat 211, F-91405 Orsay France, Mathematical Physics, 1994 05 02-1994 05 08; invited by P. Michor,

Eastwood, Michael, University of Adelaide, South Australia 5005, meastwoo@maths.adelaide.edu.au, Differential Geometry, 1994 09 17-1994 09 30; invited by V. Soucek, A. Trautmann,

Emch, Gerard, University of Florida, Gainesville FL 32611 USA, 621 NE 5th Terrace, Gainesville FL 32611 USA, Geom. Quantization, 1994 01 01-1994 02 28; invited by H. Narnhofer,

van Enter, Aernout Coert Daniël, Inst. Theoretische Natuurkunde R.U.G., Nijenborgh 4, 9747AG Groningen, Holland, aenter@th.rug.nl, Mathematical Statistical Mechanics, 1994 10 17-1994 10 19; invited by R. Dobrushin,

Erdős, László, Forschungsinstitut für Mathematik, ETH - Zentrum Zürich, CH-8092 Switzerland, erdoes@math.ethz.ch, Schrödinger Operators, 1994 12 13-1994 12 22; invited by T. Hoffmann-Ostenhof,

Essler, Fabian, Universität Bonn, Physikalisches Institut, Nussallee 12, 53115 Bonn Germany, Integrable Models, 1994 04 11-1994 04 22; invited by H. Grosse,

Fischer, Arthur, University of California, Department of Mathematics, Santa Cruz CA 95064 USA, aef@cats.ucsc.edu, Mathematical Relativity, 1994 07 24-1994 08 14; invited by P. Aichelburg, R. Beig,

Forgács, Péter, Res. Inst. for Particle and Nuclear Physics, P.O. Box 49, H-1525 Budapest 114, FORGACS@rmk530.rmki.kfki.hu, Mathematical Relativity, 1994 07 12-1994 08 10; invited by P. Aichelburg, R. Beig,

Friedrich, Helmut, Max-Planck-Institut für Astrophysik, Karl-Schwarzschild-Str. 1, D-85740 Garching bei München, Germany, hef@MPA-Garching.MPG.DE, Mathematical Relativity, 1994 07 12-1994 07 30; invited by P. Aichelburg, R. Beig,

Friedrich, Thomas, Humboldt Universität Berlin, Fachbereich Mathematik, Unter den Linden 6, Ziegelstr. 13A, D-10099 Berlin, friedric@mathematik.hu-berlin.de, Differential Geometry, 1994 09 16-1994 09 30; 1994 10 16-1994 10 28; invited by V. Soucek, A. Trautmann,

Galicki, Krzysztof, University of New Mexico, Department of Mathematics, Albuquerque, NM 87131, USA, Mathematical Physics, Quaternionic Manifolds, 1994 09 12-1994 09

30; invited by D. Alekseevsky, S. Salamon,

Gawedzki, Krzysztof, IHES, CNRS, 91440 Bures-sur Yvette, France 2-dim Quantum Field Theory, 1994 03 13-1994 04 02; invited by H. Grosse,

von Gehlen, Günter, Spreestraße 2, 53127 Bonn Germany, Two Dimensional Field Theory, 1994 03 02-1994 03 16; invited by H. Grosse,

Gibbons, Gary W., University of Cambridge, Silver Street, Cambridge CB3 9EW U.K., G.W.GIBBONS@DAMPT.CAMBRIDGE.AC.UK, General Relativity, 1994 07 24-1994 08 21; invited by P. Aichelburg, R. Beig,

Golodets, Valentin, Institute for Low Temperature Physics, Lenin Avenue 47, 310164 Kharkov, Ucraine, Operator Algebras, Ergodic Theory, 1994 02 23 - 1994 04 03; 1994 05 02 - 1994 07 01; invited by H. Narnhofer,

Graham, C.Robin, University of Washington, Department of Mathematics, GN-50, Seattle, WA 98195 USA, robin@math.washington.edu, Differential Geometry - Conformal Invariants, 1994 09 15-1994 09 23; invited by V. Soucek, A. Trautmann,

Greiter, Martin, CERN, Theory Division, 1211 Geneva 23, Switzerland, greiter@cernvm.cern.ch, Fractional Quantum Hall Effekt, 1994 11 22-1994 12 01; invited by W. Thirring,

Hajicek, Petr, ITP, Universität Bern, Sidlerstr. 5, CH-3012 Bern, hajicek@butp.unibe.ch, General Relativity 1994 09 01-1994 09 14; invited by P. Aichelburg, R. Beig,

Hazoutunian, Evgueni A., Institute for Informatics and Automation Problems, National Academy of Sciences of Armenia, P. Sevak Str. 1, Yerevan 375044, Mathematical Statistics, 1994 02 21-1994 03 01; invited by W. Thirring,

Helffer, Bernard, Ecole Normale Superieure, 45 rue d'Ulm, 75230 Paris Cedex 05, France, helffer@dmi.ens.fr, Schrödinger Operators, 1994 10 24-1994 11 05; invited by T. Hoffmann-Ostenhof,

Hempel, Rainer, University of Alabama at Birmingham, Dept. of Mathematics, CH452 AL 35294-1170, hempel@math.uab.edu, Schrödinger Operators, 1994 06 13 - 1994 07 03; invited by T. Hoffmann-Ostenhof,

Herbst, Ira, University of Virginia, Charlottesville VA 22903 USA, iwh@weyl.math.virginia.edu, Schrödinger Equations, 1994 05 18 - 1994 06 30; invited by T. Hoffmann-Ostenhof,

Hijazi, Oussana, Universite de Nantes, 2 rue de la Houssiniére, 44072 Nantes, France, hijazi@math.univ-nantes.fr, Spin Geometry, 1994 09 14-1994 09 22; invited by V. Soucek, A. Trautmann,

Hislop, Peter D., University of Kentucky, Mathematics Department, Lexington KY USA, hislop@ms.uky.edu, Schrödinger Operators, 1994 05 19-1994 06 06; invited by T. Hoffmann-Ostenhof,

Horn, David, Tel Aviv University, Faculty of Exact Sciences, Israel, HORN@VM.TAU.AC.IL, Theoretical Physics, 1994 10 14; invited by W. Thirring,

Hryniv, Ostap, Institute for Applied Problems of Mechanics and Mathematics, 3"b" Naukova Str., L'viv 290601 Ucraine, kalyniak@ippmm.lviv.ua, Probability, Mathematical Physics, 1994 09 02-1994 12 30; invited by W. Thirring,

Hübner, Peter, MPG AG, Institut für Gravitationstheorie, Max-Wien-Platz 1, D-07743 Jena, pth@gravi.physik.uni-jena.de, Relativity Theory, 1994 08 01-1994 08 06; invited by P. Aichelburg, R. Beig,

Huggett, Steven, University of Plymouth, School of Mathematics, Devon PL4 8AA U.K., P 07406@Prime-A.Plymouth.ac.uk, Twistor Theory, 1994 09 11-1994 09 23; invited by V. Soucek, A. Trautmann,

Husa, Sascha, Vienna University, Institute for Theoretical Physics, shusa@ariel.pap.univie.ac.at, General Relativity, 1994 07 01-1994 09 01; invited by P. Aichelburg, R. Beig,

Ilieva-Litova, Nevena Petrova, Institute for Nuclear Research and Nuclear Energy, 72, Tzarigradsko Chaussee, 1784 Sofia Bulgaria, nevil@bgearn.bitnet, *-algebra Representation in Field Theories with Fermions, 1994 05 29-1994 12 31; invited by W. Thirring,

Iriondo, Mirta, KTH, 100 44 Stockholm, Sweden, mirta@math.kth.se, General Relativity, 1994 07 25-1994 08 06; invited by P. Aichelburg, R. Beig,

Isenberg, James, University of Oregon, Eugene, OR 97403 USA, jim@newton.uoregon.edu, Mathematical Relativity, 1994 08 01-1994 08 13; 1994 08 20-1994 08 29; invited by P. Aichelburg, R. Beig,

Israel, Werner, University of Alberta, Edmonton, Canada T6G 251, USERUDEY@UALTAMTS.BITNET, General Relativity, 1994 07 24-1994 08 17; invited by P. Aichelburg, R. Beig,

Ivanov, Evgenyi, Joint Institute for Nuclear Research, 141980 Moscow Region, Dubna, Russia, eivanov@thsun1.jinz.dubna.su, Quaternionic Manifolds, 1994 10 10-1994 11 08; invited by D. Alekseevsky, S. Salamon,

Jadczyk, Arkadiusz, University of Wroclaw, Institute of Theoretical Physics, Dokerska4/14, 54-142 Wroclaw Poland, Operator Algebras, Quantum Theory, 1994 06 06 - 1994 06 30; invited by H. Narnhofer,

Jaekel, Christian, Universität Hamburg, II. Institut für Theoretische Physik, Luruper Chaussee 149, Behringerstr. 127, 22763 Hamburg, Algebraic QFT, 1994 06 28 - 1994 06 30; invited by H. Narnhofer,

Juriev, Denis, Research Institute of System Studies, ul. Artozavodskaya 26, Moscow, 105280 Russia, juriev@systud.msk.su, Infinite Dimensional Geometry, Differentional Geometry, 1994 11 15-1994 12 10; invited by P. Michor,

Kamber, Franz W., University of Ilinois, Department of Mathematics, 1409 W. Green Street, Urbana, IL 61081 USA, Differential Geometry, Glob. Analysis, Mathematical Physics, 1994 06 16-1994 07 15; invited by P. Michor,

Karoubi, Max, University of Paris 7, 2 place Jussieu, 75251 Paris Cedex 05 France, Differential Geometry, 1994 04 18-1994 04 22; invited by P. Michor,

Kartaschov, A., Russia, IVND and NF, Butlenova str. 4/a, Moscow, Russia, Profsojuznaja str. 96;5, 117485 Moscow Russia, Physical Models of Neutral Networks, 1994 01 17-1994 01 18; invited by H. Grosse,

Kartashova, Elena A., P.P. Shirkov Institute of Oceanology, Profsoyuznaya str 96;5, 117485 Moscow Russia, Non Linears wave Interactions, 1994 01 17-1994 01 18; invited by H. Grosse,

Klimčik, Ctirad, Charles University, Nuclear Centre, Prague 8 Czech Republic, Gravity, non-com. Geometry, 1994 04 19-1994 04 29; 1994 05 30-1994 06 01; invited by H. Grosse,

Kobak, Piotr Z., SISSA / ISA Via Beirut 2-4, Trieste, Italy, kobak@tsmi19.sissa.it, Differential Geometry, 1994 09 22-1994 09 24; 1994 12 05-1994 12 23; invited by D. Alekseevsky, S. Salamon,

Kopczyński, Wojciech, University of Warsaw, Institute of Theor.Physics, Hoza 69, Warsaw, Poland, kopcz@fnw.edu.pl, Spinors, 1994 09 15-1994 10 13; invited by V. Soucek, A. Trautmann,

Korotyaev, Evgeni, Electrotech. University, Department of Mathematics 2, Popov str., St. Petersburg, Russia, leti@sovamsu.sovusa.com, Schrödinger Operators, 1994 10 11-1994 12 03; invited by T. Hoffmann-Ostenhof,

Kotecky, Roman, Charles University, Center for Theoretical Study, Jilská 1, 11000 Praha 1, Czech Republic, kotecky@aci.cvut.cz kotecky@cpt.univ-mrs.fr, Mathematical Statistical Physics, 1994 10 17-1994 10 22; invited by R. Dobrushin,

Krasnikov, Nicolai V., Institute for Nuclear Research, Moscow 117312, Russia, krasniko@msz.inr.ac.ru, krasniko@amber.inr.free.net, Quantum Field Theory, 1994 12 02; invited by W. Thirring,

Kümmerer, Burkhard, Universität Tübingen, Mathematisches Institut, Auf der Morgenstelle 10, D-72076 Tübingen Germany, Quantenergodentheorie, 1994 02 23-1994 03 08; 1994 05 28-1994 06 11; invited by H. Narnhofer,

Laba, Izabella, UCLA, Dept. of Mathematics, Los Angeles, CA 90024, USA, laba@math.ucla.edu, Schrödinger Operators, 1994 11 20-1994 12 05; invited by T. Hoffmann-Ostenhof,

Langmann, Edwin, Royal Institute of Technology,, Dept. of Physics, Stockholm, Mathematical Aspects of Quantum Field Theory, Gauge Theories, 1994 05 18 - 1994 06 30;

1994 08 29 - 1994 09 04; invited by H. Grosse,

Le Brun, Claude, Department of Mathematics, SUNY, Stony Book,NY 11794-3651 USA, claude@math.sunysb.edu, Differential Geometry, 1994 08 25-1994 09 02; invited by P. Michor,

Lecomte, Pierre, University of Liege, 15, Avenue des Tilleuls, B-4000 Liege, Belgium, lecomte@math.ulg.ac.be, Differential Geometry, 1994 08 29-1994 09 09; invited by P. Michor,

Lee, Yong-Joong, South-Korea, University of Utrecht, Institute for Theoretical Physics, P.O.Box 80 006, 3508 TA Utrecht The Netherlands, Two Dimensional Quantum Field Theory, 1994 04 26-1994 04 29; invited by H. Grosse,

Lewandowski, Jerzy, Warsaw University, Department of Physics, Hoza 69, Warsaw, Poland, lewand@fuw.edu.pl, Differential Geometry, Spinors, Complex Methods in Gravity, 1994 09 11-1994 10 02; invited by V. Soucek, A. Trautmann,

Longo, Roberto, Universita di Roma, Via San Godenzo 141-00189, Roma, Italy, Operator Algebras and Quantum Field Theory, 1994 07 25 -1994 07 29; invited by H. Narnhofer,

Losik, Mark V., Saratov State University, ul. Astrakhanskaya 83, 410071 Saratov, Russia, losik@scnit.saratov.su, Differential Geometry, 1994 11 02-1994 12 13; invited by P. Michor,

Loss, Michael, Georgia Tech. School of Mathematics, Atlanta GA 30332 USA, loss@math.gatech.edu, Schrödinger Operators, 1994 11 21-1994 11 25; invited by T. Hoffmann-Ostenhof,

Madore, John, University of Paris Sud, Bât 211, F-91405 Orsay, madore@qcd.th.u-psud.fr, Noncommutative Geometry, 1994 09 08-1994 09 11; invited by H. Grosse,

Maes, Christian, Belgium, Kuleuven, Celestÿnenlaan 200 D, 300 Leuven, Belgium, christian.maes@fys.kuleuven.ac.be, Mathematical Physics, 1994 10 24-1994 10 26; invited by R. Dobrushin,

Maison, Dieter, Max-Plank-Institut für Physik, Föhringer Ring 6, München Germany, dim@dmumpiwh.bitnet, Mathematical Gravity, 1994 07 24-1994 08 03; invited by P. Aichelburg, R. Beig,

Majid, S.H., University of Cambridge, Silver Street, Cambridge CB 39 EW Great Britain, Differential Geometry, 1994 04 10-1994 04 30; 1994 06 14-1994 06 20; invited by P. Michor,

Malec, Edward Janusz, Univ. College Cork, Physics Department, Cork Ireland, IFUY, Reymonta 4, 30-059 Krakow Poland, STEP8037@iruccvax.ucc.ie, Rozrywka 22/76, Krakow Poland, Black Holes, 1994 07 20-1994 09 10; invited by P. Aichelburg, R. Beig,

Marchiafava, Stefano, Universitá di Roma "La Sapienza", Dipartimento di Matematica, Piazzale Aldo Moro 2, I-00185 Roma, marchiafava@sci.uniroma1.it, Differential Geometry, 1994 10 28-1994 11 06; invited by D. Alekseevsky, S. Salamon,

Marmo, Giuseppe, University of Napoli, Via B. Croce 45, Napoli Italy, Differential Geometry, 1994 04 14-1994 04 18; invited by P. Michor,

Marsden, J.E., University of California, Berkeley, CA 94720-8540 USA, Mechanics, 1994 07 25-1994 08 01; invited by P. Michor,

Martin, Philippe, EPFL, Institut de Physique Theorique, CH-1015 Lausanne, martin@eldp.ch, Statistical Physics, 1994 10 17-1994 10 22; invited by W. Thirring,

Mason, Lionel, University of Oxford, Mathematical Institute, 24-29 St. Giles, Oxford OX1 3LB, U.K., lmason@maths.ox.ac.uk, Spinors, Twistors and Conformal Geometry, 1994 09 11-1994 10 01; invited by V. Soucek, A. Trautmann,

Maszczyk, Roman, Warsaw University, Hoza 69, Warsaw, Poland, iza@fuw.edu.pl, General Relativity, 1994 09 18-1994 09 29; invited by V. Soucek, A. Trautmann,

Merkulov, Sergey, Russia, University of Plymouth, Department of Mathematics, P08204@Prime-A.Plymouth.ac.uk, Differential Geometry and Mathematical Physics, 1994 09 11-1994 09 25; invited by V. Soucek, A. Trautmann,

Messager, A., CPT Luminy Marseille, C.N.R.S., 44 Rue Caullol, Marseille 13012, France, Ising Model, 1994 10 17; invited by R. Dobrushin,

Moncrief, Vincent, Yale University, Physics Department, 217 Prospect Street, New Haven, Connecticut 06511 USA, MONCRIEF@yalph2.physics.yale.edu, Mathematical General Relativity, 1994 07 02-1994 08 31; 1994 09 08-1994 09 09; invited by P. Aichelburg, R. Beig,

Moroianu, Andrei, Romania, Centre de Mathématiques, Ecole Polytechnique - Palaisean France, moroiann@clipper.ens.fr, am@orphee.polytechnique.fr, Differential Geometry, 1994 10 06-1994 10 19; invited by V. Soucek, A. Trautmann,

O Murchadha, Niall, University College Cork, Physics Department, Cork, Ireland, STEP8030@iruccvax.ucc.ie, Mathematical Relativity, 1994 07 03-1994 08 29; invited by P. Aichelburg, R. Beig,

Nadirashvilli, Nikolai, Earth Physics Institute, ul. B. Gurinskay 10, Moscow, Russia, Schrödinger Operators, 1994 11 17-1994 12 31; invited by T. Hoffmann-Ostenhof,

Nagatomo, Yasuyuki, Sophia University, Department of Mathematics, Kioicho, Chiyoda-Ku, Tokyo 102, Japan, nagato-y@mm.sophia.ac.jp, Differential Geometry, 1994 10 24-1994 11 12; invited by D. Alekseevsky, S. Salamon,

Nitta, Takashi, Mie University, 1515 Kamihama, Mie, Japan, nitta@edu.mie-u.ac.jp, Quaternionic Geometry, Differential Geometry, 1994 10 03-1994 10 20; invited by D. Alekseevsky, S. Salamon,

Nurowski, Pavel, SISSA, Via Beirut 4, Miramare-Grignano, Italy, nurowski@tsmi19.sissa.it, Complex Geometric Methodes in General Relativity, 1994 09 11-1994 10 14; 1994 12 05-1994 12 10; invited by V. Soucek, A. Trautmann,

Ogievetsky, Oleg, MPI für Physik, Föhringer Ring 6, D-80805 München, olo@dmumpiwh.bitnet, Integrable Systems, Quaternionic Prepotentials, 1994 10 13-1994 10 28; 1994 11 10-1994 11 15; 1994 12 14-1994 12 23; invited by D. Alekseevsky, S. Salamon,

Ogievetsky, Victor, Joint Institute for Nuclear Research, 141980 Dubna near Moscow, Russia, ogievets@thsunl.jinr.duluu.su, ogievetv@pibl.physik.uni-bonn.de, Quantum Field Theory, Supersymmetries, Quaternionic, 1994 09 15-1994 10 21; invited by D. Alekseevsky, S. Salamon,

Okun, Lev, Institute for Theoretical and Experimental Physics, 25. B. Chermushkinskaya, 117259 Moscow Russia, Particle Theory, Schrödinger Professor, 1994 06 05-1994 06 25; invited by W. Thirring,

Olivieri, Enzo, Universita di Roma, Dipartimento di Matematica II, olivieri@mat.utovrm.it, Statistical Mechanics, 1994 10 17-1994 10 23; invited by R. Dobrushin,

Paldus, Josef, University of Waterloo, Department of Applied Mathematics, Waterloo, ONT. N2L 3G1, Canada, Applied Quantum Mechanics, 1994 06 07-1994 06 10; invited by T. Hoffmann-Ostenhof,

Pallua, Silvio, Prirochslvno-Matematičk Fakultét, Bijemička 32, Zagreb Croatia, 2 dim. QFT, 1994 02 28-1994 03 02; 1994 05 26-1994 05 27; invited by H. Grosse,

Panasyuk, A., L'viv State University, Department of Mathematics and Mechanics, 290602 Universytets'ka St. 1, L'viv Ucraine, Differential Geometry, 1994 03 06-1994 03 30; invited by P. Michor,

Park, Yong Moon, Yonsei University, Department of Mathematics, Seoul 120-749 South-Korea, IHES, 91440 Pures-sur-Yvette, France, Mathematical Physics, Quantum Statistical Mechanics and Dynamical Systems, 1994 01 23-1994 01 30; invited by H. Narnhofer,

Pasquier, Vincent, SPHT, CEA, CEN Saclay, 91191 Gif sur Yvette Ceden, France, Integrable Models, Field Theory, 1994 04 11-1994 04 22; invited by H. Grosse,

Pedersen, Henrik, Odense Universitet, Institut for Matematik, 5230 Odense M, Denmark, henrik@imada.ou.dk, Quaternionic Geometry, 1994 10 09-1994 10 22; invited by D. Alekseevsky, S. Salamon,

Perelomov, Askold, Institute for Theor. and Exp. Physics, 117259 Moscow, Russia, perelomo@pib1.physik.uni-bonn.de, Integrable Systems of Classical and Quantum Mechanics, String Theory, 1994 08 15-1994 09 19; 1994 09 20-1994 10 25; invited by P. Michor,

Petz, Dénes, Technical University of Budapest, Mathematical Department, Sztoczek u. 2. H. II. 26., H-1521 Budapest, Mathematical Physics, Quantum Ergodic Theory, 1994 02 23-1994 02 26; 1994 04 13-1994 04 16; 1994 05 03-1994 05 06; 1994 05 24-1994 05 27; 1994 06 13-1994 06 14; invited by H. Narnhofer,

Pfister, Charles-Edouard, EPF-L, Department of Mathematics, CH-1015 Lausanne, cpfister@eldp.epfl.ch, Statistical Mechanics, 1994 10 17-1994 10 21; invited by R. Dobrushin,

Piasecki, Jaroslaw, University of Warsawa, Institute of Theoretical Physics, Hoża 69, 00-681 Warsaw Poland, jpias@fuw.edu.pl, Statistical Physics, 1994 01 24-1994 01 29; 1994 10 17-1994 10 22; invited by A. Wehrl,

Piccinni, Paolo, Universitá "La Sapienza", Dipartimento di Matematica, P.Le A. Moro 2, 00185 Roma, Italy, piccinni@sci.uniroma1.it, Quaternionic and Hyperkähler Manifolds, 1994 09 11-1994 09 18; 1994 10 17-1994 10 21; invited by D. Alekseevsky, S. Salamon,

Pontecorvo, Massimiliano, Terza Universitá di Roma, Dipartimento di Matematica, V.C.Segre 2-00146 Roma, Italy, max@matzm3.mat.uniroma3.it, Quaternionic Manifolds, 1994 12 02-1994 12 12; invited by D. Alekseevsky, S. Salamon,

Poon, Yat S., University of California at Riverside, Dept. of Mathematics, Riverside, CA 92521, USA, ypoon@ucrmath.ucr.edu, Quaternionic Geometry,, 1994 12 04-1994 12 14; invited by D. Alekseevsky, S. Salamon,

Popa, Sorin, UCLA, Math. Dept., LA, CA 90024, von Neumann Algebras, 1994 06 09 - 1994 07 02; invited by H. Narnhofer,

Prešnajder, Peter, Comenius University, Department of Theoretical Physics, Mlynská Dolina, 84215 Bratislava Slovakia, 2 dim Quantum Field Theory, 1994 03 14-1994 03 18; 1994 04 11-1994 04 29; 1994 11 24; invited by H. Grosse,

Proeyen, Antoine Van, Instituut voor Theoretische Fysica, K.U. Leuven, Celestynenlaan 200 D, B-3001 Leuven, Belgium, antoine.vanproeyen@fys.kuleuven.ac.be, Quaternionic Manifolds, Theoretical Physics, 1994 12 12-1994 12 14; invited by D. Alekseevsky, S. Salamon,

Puta, Mircea, University of Timisoara, Bvd. V. Pãrvan 4, 1900 Timişoara, Romania, Differential Geometry, 1994 11 02-1994 12 15; invited by P. Michor,

Rácz, István, MTA-KFKI, Research Institute for Particle and Nuclear Physics, P.O.B. 49, H-1525 Budapest, istvan@rmkthe.rmki.kfki.hu, General Relativity, 1994 07 24-1994 08 26; invited by P. Aichelburg, R. Beig,

Ratiu, Tudor S., USA, University of California, Santa Cruz, CA 95064 USA, 1026 Escalona Drive, Santa Cruz, CA 95060 USA, Symplecitic Geometry, 1994 06 17-1994 08 18; invited by P. Michor,

Rein, Gerhard, Universität München, Mathematisches Institut, Theresienstr. 39, D-80333 München, rein@rz.mathematik.uni-muenchen.de, Partial Differential Equations, 1994 07 25-1994 08 21; invited by P. Aichelburg, R. Beig,

Rendall, Alan, Max-Planck-Institut für Astrophysik, Karl-Schwarzschild-Str. 1, Garching bei München Germany, anr@MPA-Garching.MPG.DE, Mathematical Relativity, 1994 07 03-1994 07 30; invited by P. Aichelburg, R. Beig,

Rietsch, Konstanze, Seisgasse 2/1, 1040 Wien Austria, Differential Geometry, 1994 01 01-1994 06 30; invited by P. Michor,

Salamon, Simon M., University of Oxford, Mathematical Institute, 24-29 St. Giles, Oxford U.K., salamon@maths.ox.ac.uk, Differential Geometry, 1994 09 20-1994 10 01; 1994 12 06-1994 12 11; invited by D. Alekseevsky, S. Salamon,

Scheunert, Manfred, Universität Bonn, Physikalisches Institut, Nussallee 12, D-53115 Bonn, Two-Dimensional Quantum Theory, 1994 02 28-1994 03 11; invited by H. Grosse,

Schmidt, Bernd, MPA-Astrophysik, Karl Schwarzschild Str. 1, Garching bei München, bgs@MPA-Garching.MPG.DE, Relativity, 1994 07 24-1994 08 05; invited by P. Aichelburg, R. Beig,

Schmidt, Klaus, University of Warwick, Mathematics Institute, kschmidt@esi.ac.at, Ergodic Theory, 1994 03 18-1994 03 30; invited by W. Thirring,

Schonmann, Roberto Henrique, Brasil, University of California at Los Angeles, 409 Hilgard Ave, Los Angeles CA, USA, rhs@math.ucla.edu, Statistical Mechanics, 1994 10 17-1994 10 23; invited by R. Dobrushin,

Seco, Luis A., University of Toronto, Toronto M5S 1A1 Canada, Seco@math.toronto.edu, Schrödinger Operators, 1994 05 18-1994 05 28; invited by T. Hoffmann-Ostenhof,

Semmelmann, Uwe, Humboldt-Universität Berlin, Institut für Reine Mathematik, Unter den Linden 6, D-11000 Berlin, Semmelma@lie.mathematik.hu-berlin.de, Quaternionic Activity, Dirac Operators, 1994 09 12-1994 09 23; invited by V. Soucek, A. Trautmann, 1994 10 11-1994 10 20; invited by D. Alekseevsky, S. Salamon,

Sewell, Geoffrey Leon, Queen Mary College, Mile End Road, London EI 4NS Great Britain, sewell@v1.ph.qmw.ac.uk, Mathematical Physics, 1994 05 16-1994 06 05; 1994 10 05-1994 10 07; invited by H. Narnhofer,

Shirkov, Dmitri, Joint Institute for Nuclear Research, Dubna 141980, Russia, QFT and Renormalisation Group, 1994 09 10-1994 09 13; invited by W. Thirring,

Shlosman, Senya, Inst. for Problems of Information Transmission, Moscow, Russia, shlos@ippi.msk.su, shlosman@math.uci.edu, Statistical Mechanics, 1994 10 04-1994 10 31; invited by R. Dobrushin,

Simon, Walter, ITP, Universität Wien, simon@pap.univie.ac.at, General Relativity, 1994 07 01-1994 07 13; 1994 07 14-1994 08 31; invited by P. Aichelburg, R. Beig,

Slovák, Jan, Masaryk University, Department of Algebra and Geometry, Janáčkovo n. 2a, 66295 Brno Czech Republic, slovak@math.muni.cz, Differential Geometry, 1994 09 05-1994 10 31; 1994 11 29-1994 12 02; invited by V. Soucek, A. Trautmann,

Smoller, Joel, University of Michigan, Mathematics Department, Ann Aibor, Michigan 48109-0004 USA, Joel.Smoller@math.lsa.umich.edu, Relativity, 1994 07 02-1994 07 21; invited by P. Aichelburg, R. Beig,

Sobolev, Alexander V., University of Sussex, MAPS, Math. and Stat. Subject Group, BN1 9QH, Falmer, Bringhton, UK, A.V.Sobolev@sussex.ac.uk, Schrödinger Operators, 1994 12 06-1994 12 21; invited by T. Hoffmann-Ostenhof,

Souček, Vladimir, Charles University, Mathematical Institute, Sokolovská 83, 18600 Prague, Czech Republic, soucek@karlin.mff.cuni.cz, Analysis on Manifolds, 1994 09 05-1994 10 30; 1994 11 29-1994 12 02; invited by V. Soucek, A. Trautmann,

Stanev, Iassen, Institute for Nuclear Research and Nuclear Energy, blvd. Tsorigradsko Claussee 72, BG-1784 Sofia, 2-dim Quantum Field Theory, 1994 03 01-1994 04 29; invited by H. Grosse,

Stoermer, Erling, University of Oslo, Dept. of Mathematics, PO Box 1053 Blindern 0316 Oslo, Norway Operator Algebras, 1994 06 09 - 1994 06 24; invited by H. Narnhofer,

Straumann, Norbert, Universität Zürich, Institut für Theoretische Physik, Winterthurerstr. 190, 8057 Zürich Switzerland, beeler@forty2.physik.unizc.ch, 5452 Switzerland, General Relativity, 1994 07 24-1994 08 06; invited by P. Aichelburg, R. Beig,

Streater, R. F., King's College Strand, London WC2R 2LS, 3 Neville Court, 22 Graces Mews, London SE5 8HE, Statistical Dynamics, 1994 06 06 - 1994 06 12; invited by H. Grosse,

Struwe, Michael, ETH Zürich, CH-8092 Zürich, struwe@math.ethz.ch, Riedhofstr. 297, CH-8049 Zürich, Schrödinger Operators, 1994 12 02-1994 12 04; invited by T. Hoffmann-Ostenhof,

Suhov, Yu M., University of Cambridge, Statistical Laboratory, DPMMS, 16 Mill Lane, Cambridge CB2 15B, UK, y.m.suhov@statslab.cam.ac.uk, Statistical Mechanics, 1994 12 13-1994 12 14; invited by R. Dobrushin,

Swann, Andrew, Odense University, Institute for Mathematics on Datalog I., Campusvej 55, 5230 Odense M, Denmark, swann@imada.on.dk, Quaternionic Structures, 1994 10 09-1994 10 22; invited by D. Alekseevsky, S. Salamon,

Taniguchi, Tadashi, Keio University, Dept. of Mathematiks, Faculty of Science and Technology, 3-14-1 Hiyoshi Kohoku-Ku, Yokohama 223, Japan, Yang-Mills Theory on Quaternionic Kähler Manofolds, 1994 10 17-1994 10 21; invited by D. Alekseevsky, S. Salamon,

Temple, Blake John, University of California, Davis, Dept. of Mathematics, Davis CA 95616 USA, jbtemple@ucdavis.edu, Shock-waves and General Relativity, 1994 07 04-1994 07 28; invited by P. Aichelburg, R. Beig,

Tkachuk, Volodymyz, L'viv State University, Chair for Theoretical Physics, 12 Drahomanov St., L'viv Ucraine, Supersymmetry and Theory Disordered Systems, 1994 02 14-1994 03 09; invited by W. Thirring,

Tod, Kenneth Paul, University Lecturer, Mathematical Institute, St. Giles Oxford, OX1 3LB Great Britain, tod@maths.ox.ac.uk, General Relativity, 1994 08 02-1994 08 17; invited by P. Aichelburg, R. Beig,

Todorov, Ivan, Institute for Nuclear Research, Tsarigradsko Chaussee 72, BG-1784 Sofia, 2-dim QFT, 1994 03 02-1994 05 01; invited by H. Grosse,

Trautman, Andrzej, University of Warsaw, Institute for Theor. Physics, Hoza 69, Warszawa 00681 Poland, Andrzej.Trautman@fuw.edu.pl, Mathematical Physics (General Relativity), 1994 09 18-1994 09 29; invited by V. Soucek, A. Trautmann,

Uhlmann, Armin, Universität Leipzig, NTZ, Am Augustusplatz, D-04109 Leipzig, Dichteoperatoren und allgemeine Zustandsräume, 1994 02 22-1994 06 01; invited by H. Narnhofer,

Vaisman, Izu, University of Haifa, Department of Mathematics, Haifa 31905 Israel, Differential Geometry, 1994 07 25-1994 08 24; invited by P. Michor,

Verbeure, Andre, KUL, Institute for Theoretical Physics, Euven, Belgium, Andre.Verbeure@Phy.kuleuven.ac.be, Mathematical Physics, 1994 10 05-1994 10 07; invited by H. Narnhofer,

Verch, Rainer, Universität Hamburg, Germany, Realitivistic Quantum Field Theory, 1994 02 28; invited by H. Narnhofer,

Vilasi, Gaetano, Universitá di Salerno, Dipartimento di Fisica Teorica, 84081 Baroussi-Salerno Italy, Infinite Dimensional Differential Geometry and Field Theory, 1994 08 20-1994 09 03; invited by P. Michor,

Vinogradov, Alexandre, Universitá di Salerno, Dipartimento di Mathematica, 84081 Baroussi-Salerno, vinograd@udsab.dia.unisa.it, Geometry of Differentional Equations, 1994 08 16-1994 09 15; invited by P. Michor,

Vizman, Cornelia, University of Timisora, Insitute of Mathematics, Bul. V. Parvan nr.4, 1900 Timisora Romania, Infinite Dimensional Lie Groups, 1994 01 01-1994 06 23; invited by P. Michor,

Voiculescu, Dan-Virgil, University of California Berkeley, Department of Mathematics, Berkeley CA 94720 USA, Operator Algebras, 1994 05 31-1994 06 12; invited by H. Narnhofer,

Vugalter, Simeon, Radiophysical Research Institute, B. Pecherskaya 25/14, N. Novgorod 603600 Russia, simeon@nirfi.nnov.su, Schrödinger Operators, 1994 10 19-1994 12 18; invited by T. Hoffmann-Ostenhof,

Wald, Robert, University of Chicago, Enrico Fermi Insitute, 5640 S. Ellis Ave., Chicago, IL 60637 USA, rmwa@midway.uchicago.edu, Mathematical Relativity, 1994 07 24-1994 08 06; invited by P. Aichelburg, R. Beig,

Weinstein, Gilbert, University of Alabama at Birmingham, Birmingham AL 35294 USA, weinstei@vorteb.math.uab.edu, Relativity, 1994 07 01-1994 07 31; invited by P. Aichelburg, R. Beig,

Wennberg, Bernt, Chalmers University of Technology, Department of Mathematics, S-41296 Göteborg, Kinetic Theory of Gases, 1994 01 18-1994 02 01; invited by W. Thirring,

Werner, Reinhard F., Universität Osnabrück, FB Physik, D-49069 Osnabrück, Mathematical Physics, 1994 02 23-1994 03 13; 1994 05 23-1994 05 28; invited by H. Narnhofer,

Wiedemann, Urs Achim, DAHTP, Cambridge CB3 9BB UK, Quantum Field Theory, 1994 06 28 - 1994 06 30; invited by H. Narnhofer,

Yngvason, Jakob, University if Iceland, Science Institute, Dunnaga 3, IS-107 Reykjavik, jyng@raunvis.hi.is, Quantum field theory, 1994 12 12-1994 12 13; invited by W. Thirring,

Yokura, Shoji, University of Kagoshima, College of Liberal Arts and Sciences, 1-21-30 Korimoto, Kagoshima 840 Japan, Algebraic Geometry, 1994 07 28-1994 08 28; invited by P. Michor,

Zahradnik, Miloš, Charles University, Sokolovská 83, 18600 Praha, Czech Republic, mzahrad@karlin.mff.cuni.cz, Mathematical Statistical Physics, 1994 10 19-1994 10 24; invited by R. Dobrushin,

Zhislin, Grigorii, Radio-Phys. Research Institute, Bolsliaya Pecherskaya 25/14, Nijshni Novgorod, 603600 Russia, greg@nirfi.sandy.nnov.su, Schrödinger Operators, 1994 10 19 - 1994 12 18; invited by T. Hoffmann-Ostenhof,

Seminars and ESI-Colloquia held in the year 1994

A. P. Kartaschov, University of Moscow: *Self organizing neural networks,* 1994 02 17, invited by H. Grosse.

E. Kartaschova, Shirshov Institute, Moscow: *Non–linear wave interactions in bounded regions,* 1994 02 18, invited by H. Grosse.

Jaroslaw Piasecki, Institute of Theoretical Physics, Warsaw: *Aggregation of Mass by Inelastic Collisions,* 1994 02 27, invited by W. Thirring.

C. D. Jäkel, University of Hamburg: *Relation between relativistic KMS–states for different temperatures,* 1994 02 28, invited by H. Narnhofer.

Rainer Verch, University of Hamburg: *Hadamard Vacua for Quantum Fields on Manifolds and the Principle of local definiteness,* 1994 02 28, invited by H. Narnhofer.

M. Scheunert, University of Bonn: *The Tensor Product of Tensor Operators over Quantum Algebras with some Applications to Quantum Spin Chains,* 1994 03 03, invited by H. Grosse.

Fabio Benatti, University of Trieste: *Dynamical Entropy and Clustering Properties,* 1994 03 04, invited by H. Narnhofer.

Burkhard Kümmerer, University of Tübingen: *Quantum Markov Processes, K–Systems and Scattering,* 1994 03 04, invited by H. Narnhofer.

A. Y. Alekseev, University of Uppsala and Steklow Mathematical Institute, St. Petersburg: *Integrability and the Chern–Simons Theory,* 1994 03 08, invited by H. Grosse.

R. Werner, University of Osnabrück: *The classical limit of quantum mechanics,* 1994 03 08, invited by H. Narnhofer.

G. von Gehlen, University of Bonn: *Realisations of Non–Unitary Conformal Theories by Non–Integrable Simple Spin Chains,* 1994 03 10, invited by H. Grosse.

T. Strobl, Technical University of Vienna: *A New Class of Topological Field Theory in 2 Dimensions,* 1994 03 14, invited by H. Grosse.

A. Y. Alekseev, University of Uppsala and Steklov Math. Institute of St. Petersburg : *Factorization of Symplectic Structure of the Moduli Space of Flat Connections,* 1994 03 15, invited by H. Grosse.

K. Dietz, University of Bonn: *Vacuum Polarisation in Strong External Fields,* 1994 03 16, invited by H. Grosse.

Walter Thirring, University of Vienna: *Quantum Anosov System = Relativistic Quantum Field Theory,* 1994 03 18, invited by H. Grosse.

K. Gawedzki, I H E S: *Conformal Field Theory and Noncommutative Geometry,* 1994 03 21, invited by H. Grosse.

S. I. Bezuglyi, University of Kharkov: *Problems of outer conjugacy of automorphisms in operator algebras and in ergodic theory,* 1994 03 21, invited by H. Narnhofer.

V. A. Golodets, University of Kharkov: *Orbit equivalence in ergodic theory and 1–cocycles,* 1994 03 22, invited by H. Narnhofer.

Robert Dorfman, University of Utrecht: *The escape–rate formalism for transport coefficients,* 1994 03 23, invited by H. Narnhofer, H.A. Posch.

Y. Stanev, University of Sofia: *Classification of the local Extensions of SU (2)$^{\otimes r}$ Conformal Current Algebras,* 1994 04 11, invited by H. Grosse.

ESI–Colloquium: *Shahn Majid, University of Cambridge, UK:* Braided Geometry and q–Minkovski space, 1994 04 12, invited by P. Michor.

V. Pasquier, Saclay: *Computation of Correlation Functions in Calogero Sutherland and related models,* 1994 04 15, invited by H. Grosse.

F. Essler, University of Bonn: *Quasiparticle Interpretation and Exact S–Matrix of the 1–d Hubbard Model,* 1994 04 18, invited by H. Grosse.

ESI–Colloquium: *Max Karoubi, Université Paris VII:* Non Commutative Topological Forms, 1994 04 19, invited by P. Michor.

C. Klimcik, University of Prague: *Gravity in Non–Commutative Geometry,* 1994 04 20, invited by H. Grosse.

Shahn Majid, University of Cambridge, UK: *Matched Pairs of Algebras and Groups,* 1994 04 21, invited by P. Michor.

Ivan T. Todorov, Bulgarian Academy Sciences, Sofia: *Arithmetic characteristics of conformal current algebra models,* 1994 04 22, invited by H. Grosse.

ESI–Colloquium: Harald Grosse, University of Vienna: *On Models of Statistical Physics and Quantum Field Theory – some Recent Developments,* 1994 04 26, invited by W. Thirring, P. Michor.

ESI–Colloquium: Michel Dubois–Violette, CNRS, Université de Orsay, France: *Noncommutative differential geometry, symplectic structures and quantum mechanics, gauge theories,* 1994 05 03, invited by P. Michor.

Fabio Benatti, University of Trieste: *Dynamical Entropy for Qantum Systems,* 1994 05 17, invited by H. Narnhofer, W. Thirring.

K. Alicki, Universities of Gdansk and Leuven: *An alternative definition of Dynamical Entropy,* 1994 05 19, invited by H. Narnhofer.

D. Petz, University of Budapest: *Curvature on the state space of a finite quantum system,* 1994 05 25, invited by H. Narnhofer.

Luis Seco, University of Toronto: *The Mathematics of Large Atoms,* 1994 05 26, invited by T. Hoffmann–Ostenhof.

ESI–Colloquium: Dan Voiculescu, Berkeley: *Free Entropy,* 1994 05 31, invited by H. Narnhofer.

J. Paldus, Department of Applied Mathematics University of Waterloo: *Lie–algebraic Approches to the Many–Electron Correlation Problem,* 1994 06 10, invited by T. Hoffmann-Ostenhof, H. Lischka.

E. Störmer, University of Oslo: *Subfactors of a factor of type III-lambda which contain a maximal centralizer,* 1994 06 21, invited by H. Narnhofer.

R. Beig, University of Vienna: *Some open problems in General Relativity,* 1994 06 28, invited by W. Thirring.

R.F. Streater, King's College London: *Isothermal Dynamics,* 1994 06 08, invited by H. Grosse.

R.F. Streater, King's College London: *Wavelets on the Poincaré Half-Plane,* 1994 06 10, invited by H. Grosse.

Sorin Popa, Los Angeles: *Analysis and combinatorics in the theory of subfactors,* 1994 06 14, invited by H. Narnhofer.

Mark Ashbaugh, University of Missouri: *Isoperimetric Inequalities for Membranes,* 1994 06 13, invited by T.Hoffmann-Ostenhof.

Arkadiusz Jadczyk, University of Wroclaw: *Particle tracks, events, and quantum measurements,* 1994 06 16, invited by H. Narnhofer.

Roberto Longo, University of Rome: *An Algebraic Spin and Statistics Theorem,* 1994 06 27, invited by H. Narnhofer.

Ira Herbst, University of Virginia, Charlottesville: *The Stark effect for atoms and molecules.,* 1994 06 22, invited by T. Hoffmann-Ostenhof.

Urs Wiedmann, University of Hamburg: *Rieffel Induction, a Method of Gauge fixing,* 1994 06 29, invited by H. Narnhofer.

ESI-Colloquium: Armand Borel, IAS, Princeton: *History of the invariant problem and of full reducibility for SL(2,C),* 1994 07 01, invited by P. Michor.

Franz W. Kamber, University of Illinois: *Transversal Index Theory I,* 1994 06 23 1994 06 27, invited by P. Michor.

Franz W. Kamber, University of Illinois: *Transversal Index Theory I (part II),* 1994 06 27, invited by P. Michor.

Rainer Hempel, University of Alabama at Birmingham: *Strong magnetic fields, Dirichlet boundaries, and spectral gaps,* 1994 06 30, invited by T.Hoffmann-Ostenhof.

Tudor Ratiu, University of California, Santa Cruz: *Dissipation in perturbed Hamiltonian systems,* 1994 06 28, invited by P. Michor.

Tudor Ratiu, University of California, Santa Cruz: *Dissipation in perturbed Hamiltonian systems,* 1994 06 29, invited by P. Michor.

Joel Smoller, University of Michigan: *Existence of Particle-Like and Black-Hole Solutions for Einstein/Yang-Mills Equations,* 1994 07 07, invited by P.C.Aichelburg, R.Beig.

Alan Rendall, MPI of Astrophysics Garching: *Global solutions of the Einstein evolution equations General considerations,* 1994 07 08, invited by P.C. Aichelburg, R. Beig.

Alan Rendall, MPI of Astrophysics Garching: *Global solutions of the Einstein evolution equations Collapse of a massless scalar field,* 1994 07 11, invited by P.C. Aichelburg, R. Beig.

Alan Rendall, MPI of Astrophysics Garching: *Global solutions of the Einstein evolution equations Collapse of collisionless matter,* 1994 07 12, invited by P.C. Aichelburg, R. Beig.

Joel Smoller, University of Michigan: *Shock-Waves and General Relativity - An Extension of the Oppenheimer-Snyder Model for Gravitational Collapse,* 1994 07 14, invited by P.C. Aichelburg, R. Beig.

Blake Temple, University of California, Davis: *An Astrophysical Shock-Wave Solution of the Einstein Equations Modeling an Explosion,* 1994 07 14, invited by P.C. Aichelburg, R. Beig.

Gilbert Weinstein, University of Alabama: *The Einstein-Maxwell Equations and Harmonic maps with prescribed singularities,* 1994 07 13, invited by P.C. Aichelburg, R. Beig.

Peter Forgács, Central Research Institute for Physics, Budapest: *Bogomolny-type equations for gravitating sigma models,* 1994 07 19, invited by P.C. Aichelburg, R. Beig.

Lars Andersson, Royal Institute of Technology, Stockholm: *A warped product splitting theorem,* 1994 07 22, invited by P.C. Aichelburg, R. Beig.

Piotr Bizon, Krakow University: *Harmonic Maps between 3-Spheres as a Toy Model of Bartnik-McKinno Phenomenon,* 1994 08 01, invited by P.C. Aichelburg, R. Beig.

Peter Hübner, MPI Jena: *Calculating Spacetime Structure in the Large,* 1994 08 02, invited by P.C. Aichelburg, R. Beig.

Herbert Balasin, TU Wien: *Distributional Energy-Momentum Tensor of the Kerr-Newman Family,* 1994 08 04, invited by P.C. Aichelburg, R. Beig.

Walter Simon, University of Vienna: *Closed Two Forms from Symmetries,* 1994 08 03, invited by P.C. Aichelburg, R. Beig.

Istvan Racz, Research Institute for Particle and Nuclear Physics: *On Einstein Equations for Spacetimes Possessing A Non-Null Killing Field,* 1994 08 04, invited by P.C.Aichelburg, R. Beig.

Paul Tod, Oxford University: *The Hoop Conjecture and the Gibbons-Penrose construction of trapped surfaces,* 1994 08 12, invited by P.C. Aichelburg,, R. Beig.

Jim Isenberg, University of Oregon: *Non Constant Mean Curvature Solutions of the Einstein Constraint Equations,* 1994 08 11, invited by P. Aichelburg, R. Beig.

Vince Moncrief, Yale University: *Hamiltonian Reduction of Einstein's Equations 1. Reduction to Teichmüller space in 2+1 dimensions,* 1994 08 08, invited by P. Aichelburg, R. Beig.

Vince Moncrief, Yale University: *Hamiltonian Reduction of Einstein's Equations 2. U(1) symmetry and reducible to a harmonic map,* 1994 08 09, invited by P. Aichelburg, R. Beig.

Vince Moncrief, Yale University: *Hamiltonian Reduction of Einstein's Equations 3. Reduction in 3+1 dimensions and the analogue of Teichmüller space,* 1994 08 10, invited by P. Aichelburg, R. Beig.

István Rácz, Research Institute for Particle & Nuclear Physics, Budapest: *On Einstein's Equations for Spacetimes Possessing a Non-Null Killing Field,* 1994 08 15, invited by P.C. Aichelburg, R. Beig.

Sascha Husa, Institute for Theoretical Physics, Vienna : *Vacuum Initial Data with Toroidal Conformal Symmetry,* 1994 08 16, invited by P.C. Aichelburg, R. Beig.

Robert Bartnik, University of New England, Armidale : *The Quasispherical Coordinate Condition,* 1994 08 16, invited by P.C. Aichelburg, R. Beig.

Edward Malec, Jagellonian Univresity, Krakow: *Trapped Surfaces in Nonspherical Geometries,* 1994 08 16, invited by P.C. Aichelburg, R. Beig.

Niall O'Murchadha, University College, Cork, Ireland: *The multipole moments of the extrinsic curvature,* 1994 08 23, invited by P.C. Aichelburg, R. Beig.

Claude LeBrun, SUNY, New York: *On Quaternion-Kähler Manifolds,* 1994 09 01, invited by P. Michor.

Pierre Lecomte, Université de Liege, Belgium: *On a splitting exact sequence of graded Lie algebras associated to a manifold,* 1994 09 01, invited by P. Michor.

Petr Hajicek, Universität Bern: *Group Quantization of Parametrized Systems,* 1994 09 06, invited by P.C. Aichelburg, R. Beig.

L.J. Mason, University of Oxford: *Quasi-local mass,* 1994 09 13, invited by H.Urbantke V.Soucek.

P. Nurowski, S I S S A: *Algebraically special solutions to the Einstein equations and C-R spaces,* 1994 09 14, invited by H. Urbantke V. Soucek.

L.J. Mason, University of Oxford: *Spin 3/2-fields and local twistors: Twistors for vacuum space-times?,* 1994 09 14, invited by H. Urbantke V. Soucek.

J. Lewandowski, University of Warsaw: *Diff invariant structures on $\mathcal{A}?\mathcal{G}$,* 1994 09 15, invited by H. Urbantke V. Soucek.

S. Merkulov, University Plymouth: *Twistor theory and Kodaira moduli spaces,* 1994 09 16, invited by H. Urbantke V. Soucek.

Paolo Piccinni, Universita "La Sapienza", Roma: *Weyl structures in quaternionic geometry,* 1994 09 16, invited by D. Alekseevski, P. Michor.

Andrzej Trautman, Univ. Warsaw, SISSA: *The Dirac Operator on Hyper Surfaces,* 1994 09 27, invited by H. Urbantke, V. Souček.

Andre Verbeure, University of Leeuven: *A new look at the Goldstone theorem,* 1994 10 05, invited by H. Narnhofer.

Isabel Dotti Miatello, University of Cordoba: *Hypercomplex structures on solvable Lie groups,* 1994 09 28, invited by D. Alexeevski S. Salamon.

Krzysztof Galicki, University of New Mexico: *Einstein metrics and 3-Sasakian geometry,* 1994 09 28, invited by D. Alexeevski S. Salamon.

Victor I. Ogievetsky, Institute for Nuclear Research, Dubna: *Complex and quaternionic geometries in supersymmetry and self-duality: Informal talk and discussion,* 1994 09 30, invited by D. Alexeevski S. Salamon.

ESI–Colloquium: Victor Ogievetsky, Joint Institute Nuclear Research, Dubna: *Four Dimensional Integrable Systems* 1994 10 11, invited by P. Michor.

David Horn, University of Tel Aviv: *Dynamics of Temporal Segmentation in a System of Coupled Nonlinear Oscillators,* 1994 10 14, inv. by W. Thirring.

Chand Devchand, JINR, Dubna: *An Explicit Construction Hyper-Kähler Metrics,* 1994 10 12, invited by D.Alexeevski.

Askold Perelomov, Institute of Theoretical and Experimental Physics, Moscow: *q-deformed coherent states for the simplest quantum groups,* 1994 10 18, invited by H. Grosse.

Takashi Nitta, Mie University Kamihama: *Deformation of quaternion-structure,* 1994 10 14, invited by D. Alexeevski.

Askold Perelomov, Institute of Theoretical and Experimental Physics, Moscow: *Integrable Systems of Classical Mechanics: Integration of Equations of Motion,* 1994 10 18, invited by P. Michor.

Henrik Pedersen, Odense University, Denmark: *Conformally Invariant Einstein Geometry,* 1994 10 17, invited by D. Alexeevski, S. Salamon.

Andrew Swann, Odense University, Denmark: *Hyperkähler Manifolds associated to Quaternionic Kähler Manifolds,* 1994 10 17, invited by D. Alexeevski, S. Salamon.

A. van Enter, Groningen: *Some new examples of ill-defined renormalization maps.,* 1994 10 17, invited by R. Dobrushin, S. Shlosman.

Charles Boyer, University of New Mexico: *Hypercomplex Structures on Stiefel Manifolds,* 1994 10 19, invited by D. Alexeevski, S. Salamon.

Dmitri V. Alexeevski, Center "Sophus Lie", Moscow: *Twistor construction for some Grassmann structures,* 1994 10 20, invited by D. Alexeevski, S. Salamon.

Roland Dobrushin, Moscow: *New arroach to the cluster expansion and the estimates of the low temperature Ising model semiinvariants,* 1994 10 18, invited by S. Shlosman.

R. Schonmann, Los Angeles: *Asymptotic behaviour of the Ising model in the limit of low temperatutes and small magnetic fields,* 1994 10 19, invited by R. Dobrushin, S. Shlosman.

Ostap Hryniv, Institute for Applied Problems of Mecanics and Mathematics, Liviv: *Fluctuations of the 2D Ising model droplet around the Wulff shape,* 1994 10 19, invited by R. Dobrushin, S. Shlosman.

Senya Shlosman, Institute for Problems of Information Transmission, Moscow: *Restricted variational problem and the Ising model,* 1994 10 20, invited by R. Dobrushin.

Ch. Pfister, Lausanne: *Conditional Limit Theorems and Equivalence of Ensembles,* 1994 10 20, invited by R. Dobrushin, S. Shlosman.

M. Zahradnik, Praha: *Stratified Gibbs states of 3D Ising type models,* 1994 10 21, invited by P. Dobrushin, S. Shlosman.

Enzo Olivieri, Rome: *Ising model and renormalization group pathologies,* 1994 10 21, invited by R. Dobrushin, S. Shlosman.

Ch. Maes, Leuven: *Percolation techniques in disordered lattice spin systems,* 1994 10 24, invited by R. Dobrushin, S. Shlosman.

Tadashi Taniguchi, KEIO University: *Gap Phenomena for Quaternionic Yang - Mills connections,* 1994 10 20, invited by D. Alexeevski.

Round–Table Discussion: Ph. Martin, L. Milanovic, J. Piasecki, H. Posch, W. Thirring: *Aggregation Phenomena in Systems with Confining Potentials,* 1994 10 21, invited by W. Thirring.

ESI-Colloquium: Thomas Friedrich, Humboldt-University Berlin: *The Dirac Equation on Riemannian Manifolds,* 1994 10 25, invited by P. Michor.

Bernard Helffer, Ecole Normale Superieur Paris: *Semiclassical Analysis and Problems in Large Dimension,* 1994 10 27, invited by T. Hoffmann-Ostenhof.

Evgenyi A. Ivanov, JINR, Dubna: *Harmonic Space Description of Quaternionic Manifolds,* 1994 10 27, invited by D. Alexeevski S. Salamon.

D. A. Anosov, Steklov Institute Math. Moscow: *Flows on Surfaces II,* 1994 10 27, invited by K. Schmidt.

Shmuel Agmon, The Hebrew University Jerusalem: *On Perturbations of Eigenvalues and Resonances,* 1994 11 03, invited by T. Hoffmann-Ostenhof.

Evgeni Korotyaev, Electrotech. University St.Petersburg: *The Inverse Problem for the Hill Operator,* 1994 11 04, invited by T. Hoffmann-Ostenhof.

Yasuyuki Nagatomo, Sophia University, Japan: *Instantons on Quaternion - Kähler manifolds,* 1994 11 07, invited by D. Alexeevski.

Thomas Hudetz, Institute of Theoretical Physics Vienna: *Die Berechnung von Voiculescus topologischer Entropie,* 1994 11 17, invited by W. Thirring.

Oleg Ogievetsky, Joint Institute for Nuclear Research, Moscow: *Holonomy groups and extended supersymmetry in topological Yang - Mills theory,* 1994 11 14, invited by D. Alexeevski.

Edmond Bonan, Universite de Picardie, Amiens: *The decomposition of the exterior algebra of Hyperkählerian Manifolds,* 1994 11 23, inv. P. Michor.

Mark Losik, Saratov University: *A generalization of Cartan's theorem on the cohomology of homogeneous spaces.,* 1994 11 24, invited by P. Michor.

Michael Loss, Georgia Tech.School of Mathematics, Atlanta: *Symmetry of Minimizers in the Ginzburg-Landau and Skyrme Models,* 1994 11 23, invited by T. Hoffmann-Ostenhof.

Martin Greiter, C E R N: *Fractional Hall Effect,* 1994 11 28, inv. W. Thirring.

Martin Greiter, C E R N: *The problem of charge and spin in models for high temperature supraconductivity,* 1994 11 24, invited by W. Thirring.

Izabella Laba, U C L A: *Multiparticle Schrödinger operators with a constant magnetic field,* 1994 12 01, invited by T. Hoffmann-Ostenhof.

Michael Struwe, E T H Zürich: *Landau-Ginzburg models,* 1994 12 02, invited by T. Hoffmann-Ostenhof.

Gregory Zhislin, Radio-Physical Research Institute, Nij.Novgorod: *The location of the essential spectrum of many-particle hamiltonians with magnetic field,* 1994 12 12, invited by T. Hoffmann-Ostenhof.

Massimiliano Pontecorvo, SISSA, Italy: *Twistor Spaces of 4-Manifolds,* 1994 12 09, invited by D. Alexeevski, S. Salamon.

Yat S. Poon, University of California at Riverside, USA: *Symmetry of Self-dual Manifolds,* 1994 12 09, invited by D. Alexeevski, S. Salamon.

Simeon Vugalter, Radiophysical Research Institute, N. Novgorod, Russia: *Multiparticle Schrödinger Operators with a Homogeneous Magnetic Field. Spectral Asymptotics.,* 1994 12 15, invited by T. Hoffman-Ostenhof.

Y.M. Suhov, Cambridge University, England: *Ground states of quantum lattice models,* 1994 12 13, invited by R. Dobrushin.

F. Podesta, University of Florence: *Compact quotients of negatively curved manifolds with large isometry group.,* 1994 12 19, invited by D. Alexeevski, S. Salamon.

Walter Thirring: Institut für Theoretische Physik, Universität in Wien, Boltzmanngasse 9, A-1090 Wien, Austria. Tel. (0)222-31367-3400.
E-mail address: internet: fwagner@pap.univie.ac.at

Peter W. Michor: 'Erwin Schrödinger International Institute of Mathematical Physics', Pasteurgasse 6/7, A-1090 Wien, Austria. Tel. (0)222-3172047-10.
E-mail address: Peter.Michor@esi.ac.at

ESI preprints and newsletters are available via 'anonymous ftp', 'gopher', or 'www': FTP.ESI.AC.AT