ESI Erwin Schrödinger International Institute for Mathematics and Physics

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Seminar

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Strong Cosmic Censorship and the initial singularity in Bianchi spacetimes

Wednesday, August 2, 2017

at 15:30 h

ESI, Boltzmann Lecture Hall

Abstract: For given initial data to Einstein's field equations, one can find a spacetime solving these equations, and one can do so in a unique way (up to isometries) if one assumes the spacetime to be maximal globally hyperbolic. Both statements were proven by Choquet-Bruhat and Geroch in the 1950s and 60s. When dropping the additional condition of global hyperbolicity, it is an open question whether one can extend this spacetime, possibly in a non-unique way. Strong Cosmic Censorship conjectures that no such extension exists, at least not for generic initial data.

In my talk, I focus on spacetimes where the initial data is symmetric under the action of a three-dimensional Lie group (a so-called Bianchi spacetime) and the stress-energy tensor is that of vacuum or a perfect fluid. I present results proving the Strong Cosmic Censorship conjecture for orthogonal Bianchi class B spacetimes and explore in more detail the asymptotic behaviour towards the initial singularity.

P. Chruściel

July 31, 2017