

TUTORIAL I

Dr. Christoph Aistleitner

TU Graz

Uniform distribution and discrepancy: Analytic, number-theoretic and computational aspects

September 19 to September 21, 2017

at 10:15 h

ESI, Boltzmann Lecture Hall

Abstract: This course starts with a basic introduction to the classical theory of uniform distribution modulo one and to discrepancy theory. We describe how the subject evolved since the beginning of the twentieth century, and recall several classical results (first day). We describe the connection with Fourier analysis, give a proof of the Erds-Turan inequality and of Koksma's inequality, and show some applications in number theory (second day). We recall basic facts of Quasi-Monte Carlo integration, present the viewpoint of tractability theory, and prove upper and lower bounds for the inverse of the discrepancy. For this purpose we introduce tools from non-parametric statistics, combinatorial complexity theory and metric entropy theory (third day).

F. Pillichshammer

September 12, 2017