Der Wissenschaftsfonds.

Institute for Analysis and Number Theory

Mini-Series on Harmonic Analysis and Discrete Geometry. Lecture 2.

18.10.2018, 14.00-15.30

Seminarraum Analysis-Zahlentheorie, Kopernikusgasse 24, 2.OG

Energy minimization and discrepancy on the sphere

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Two most standard ways to measure the quality of a point set on the sphere are discrepancy and energy. In the former, one compares the proportion of points in certain subdomains to their area, while in the latter one views points as electrons that repel according to a certain force. We shall talk about various energy minimization problems on the sphere, when minimal energy induces uniform distribution, how the structure of the function affects minimizers, special point sets that arise as minimizers (tight frames, spherical designs), connections to spherical harmonics, Gegenbauer polynomials, and positive definite functions etc. Then we shall discus discrepancy on the sphere: known bounds, methods, constructions, as well as relations to energy. This is the second lecture in a mini-series of four lectures. All lectures are independent and fully self-contained. No prior knowledge of any of the subject involved in the talk will be assumed.

P. Grabner, Ch. Aistleitner