Institut für Analysis und Zahlentheorie

Mathematisches Kolloquium

20.03.2020, 14:00 Uhr

Seminarraum Analysis-Zahlentheorie, Kopernikusgasse 24, 2.OG

Minimality of the rock-salt structure and Universal Optimality for multi-component lattice systems

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The mathematical justification of crystallization phenomena is usually a challenging problem and very few results exist about the optimality of ionic crystals. In this talk, I will present new analytical and numerical results obtained with Markus Faulhuber (University of Vienna) and Hans Knüpfer (University of Heidelberg) about the optimality of the rock-salt structure among lattices and charges distributions. These results are based on optimality results for special lattice functions arising in Number Theory: the Epstein zeta functions and the lattice theta functions. Many open problems will be presented, including the Universal Optimality for alternating species that we have already obtained in dimension 2 for the triangular lattice with Markus Faulhuber.

Ujue Etayo Rodriguez