universität wien
Fakultät für Mathematik

EINLADUNG

zum

HABILITATIONSVORTRAG

Dr. Markus Faulhuber
(Universität Wien, Fakultät für Mathematik)

“Maximal theta functions”

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Abstract:
We present the dual to a celebrated result of Hugh Montgomery from 1988. Montgomery studied a family of 2-dimensional lattice theta functions and proved that the hexagonal lattice yields the unique minimizer within the set of lattices. The named lattice theta functions can be seen as analogues of the Jacobi theta 3 function. We consider shifted and charged lattice theta functions, which may be seen as analogues of the Jacobi theta 2 and 4 functions. Our main result shows that in both cases the hexagonal lattice is the unique maximizer. Montgomery's result connects to the sphere packing problem and has implications in the theory of energy minimization, while our result connects to sphere covering and has implications for the polarization problem in the plane. Further implications are an optimality result for charged ionic crystals studied by physicist Max Born in 1921 or, in combination with Montgomery's result, the solution to the Gabor frame conjecture of Thomas Strohmer from 2003.

Donnerstag, 2. Mai 2024
14:00 Uhr bis 14:45 Uhr
Ort: Seminarraum 05, 1 OG.
Fakultät für Mathematik,
Oskar-Morgenstern-Platz 1

Ulisse Stefanelli
Radu Bot