Wintersemester 2023/24

Dresdner Mathematisches Seminar

Prof. Dr. Manuel Friedrich
Friedrich-Alexander-Universität Erlangen-Nürnberg, Department Mathematik

The crystallization problem

The question whether for particle systems the ground states of a configurational energy arrange in a periodic lattice is referred to as the crystallization problem. In this talk, I present some known results for energies featuring two-body short-ranged particle interactions and three-body angular potentials. Afterwards, I discuss a new technique which allows to reduce the crystallization problem in the square lattice to a simple minimization related to the isoperimetric inequality in $l_1$.

We also discuss the global geometry of ground states and the emergence of a macroscopic shape, the so-called Wulff shape, as the number of particles grows to infinity.

Mittwoch, 06.12.2023, 17:00 Uhr – Willers-Bau, Raum C 129

Leitung: Jun.-Prof. Dr. Markus Schmidtchen

Vor dem Vortrag findet ab 16:30 Uhr ein gemeinsames Kaffee-/Teetrinken vor Hörsaal WIL C 307 (!) statt.