

# Seminar

Prof. Elliott Lieb

Princeton University

## A Pfaffian formula for monomer-dimer partition functions

Tuesday, March 15, 2016

at 15:00 h

ESI, Boltzmann Lecture Hall

**Abstract:** The monomer-dimer covering problem shows up in several areas of physics and other fields. While the partition function of the pure dimer covering problem on planar lattices was solved ages ago by Kasteleyn and Fisher-Temperley in terms of Pfaffians (whose squares are easily computable determinants), the inclusion of monomers (i.e., vertices uncovered by dimers) is an intractable problem. Together with Alessandro Giuliani and Ian Jauslin we have succeeded in utilizing an ancient theorem\* to write the partition function of a restricted monomer-dimer problem as a Pfaffian. This is the model in which monomers are allowed on the boundary vertices of an arbitrary planar graph.

J. Yngvason

March 4, 2016