

PHYSIKALISCHES KOLLOQUIUM

Wintersemester 2018/19

Das Kolloquium findet (soweit unten nicht anders angegeben) jeweils montags 17:15 Uhr im Hörsaal P des Physikalischen Instituts auf dem Hubland Campus Süd der Universität Würzburg statt.

19. November 2018

Prof. Dr. Cristiane Morais Smith
University of Utrecht
Institute for Theoretical Physics

There is Plenty of Room at the Bottom...but Even more in a Fractal

Abstract

Feynman's original idea of using one quantum system that can be controlled and manipulated at will to simulate the behaviour of another more complex one has flourished during the last decades in the field of cold atoms. More recently, this concept started to be developed in nano photonics and in condensed matter. In this talk, I will discuss a few recent experiments, in which 2D electron lattices were engineered on the nanoscale. The first is the Lieb lattice [1], and the second is a Sierpinski gasket [2]. The realisation of fractal lattices opens up the path to electronics in fractional dimensions. At the end, I will discuss some ongoing projects on orbitronics and topological states.

References

- [1] M. R. Slot, T. S. Gardenier, P. H. Jacobse, G. C. P. van Miert, S. N. Kempkes, S. J. M. Zevenhuizen, C. Morais Smith, D. Vanmaekelbergh, and I. Swart^[1]_[SEP] "Experimental realisation and characterisation of an electronic Lieb lattice"^[1]_[SEP] Nature Physics 13, 672 (2017)
- [2] S. N. Kempkes, M. R. Slot, S. E. Freeney, S. J. M. Zevenhuizen, D. Vanmaekelbergh, I. Swart, and C. Morais Smith, "Design and characterization of electronic fractals, arXiv:1803.04698 (2018), to appear in Nature Physics (2018).

Für die Dozenten der Fakultät für Physik und Astronomie

Frau Prof. Dr. Erdmenger, Prof. Dr. Bode, PD Dr. Behr und Herrn Steppert