SFB/TRR 21 - Seminar

13. November 2014, Ulm

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Synthesizing Lattice Structure in Phase Space

We consider a realistic model, i.e., ultracold atoms in a driven optical lattice, to realize phase space crystals [Phys. Rev. Lett. 111, 205303 (2013)]. The corresponding lattice structure in phase space is more complex and contains rich physics. A phase space lattice differs fundamentally from a lattice in real space, because its coordinate system, i.e., phase space, has a noncommutative geometry, which naturally provides an artificial gauge (magnetic) field. We study the behavior of the quasienergy band structure as function of the artificial magnetic field and investigate the thermal properties. This work is summarized on arXiv:1410.3795.

13. November 2014, 14:15 Uhr

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