

Speaker: Sigmund Kohler, Instituto de Ciencia de Materiales de Madrid, CSIC
Title: Solid-State Qubits under Bichromatic Driving
Date: Thursday, June 20, 13:30 pm
Place: Seminar room 915

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Abstract:

Driving a quantum system with two (or more) frequencies allows one to gradually break spatio-temporal symmetries and to investigate commensurability effects. Experimentally, such effects have been measured in the electron current through ac-driven double quantum dots [1]. In this setup, the driving causes Landau-Zener-Stückelberg-Majorana interferences which are the equivalent of a Mach-Zehnder interferometer in the energy-time domain. For bichromatic driving, depending on the commensurability of the frequencies, the signal is governed by equal or pseudo-random phase factors, each leading to a characteristic interference pattern. Already from the time-translation properties in the stationary limit follow generic properties of time-averaged expectation values [2]. They can be tested with numerical calculations with a scheme based on two-color Floquet theory and matrix-continued fractions.

[1] F. Forster et al., Phys. Rev. B 92, 245422 (2015).

[2] M. L. Olivera-Atencio, J. Casado-Pascual, and S. Kohler,
Eur. Phys. J. B 93, 30 (2020).