

Physikalisches Kolloquium



Bild: Simon Bierwald

Thursday, 11.01.2024, 16:15, HS 100

Reception with coffee & cookies 16:00

(For university staff: please bring your own cup for sustainability reasons)

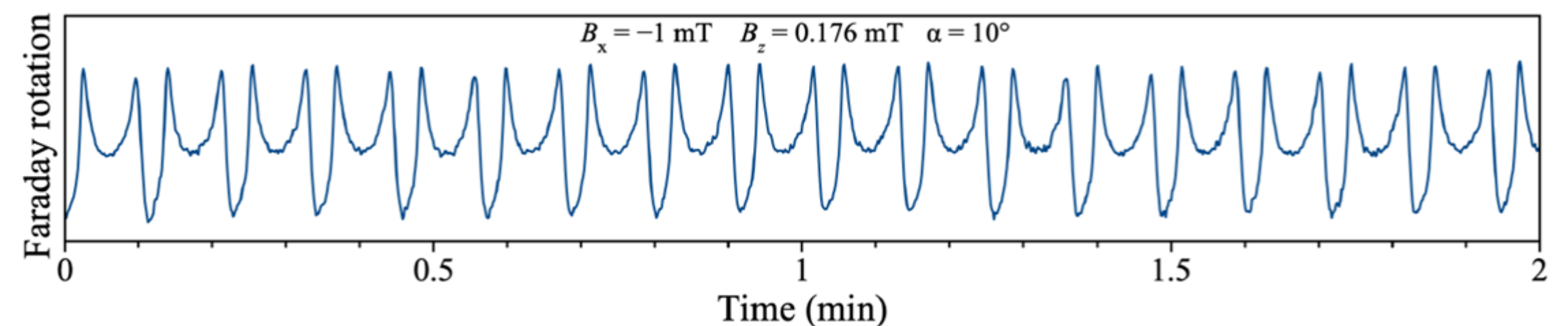
Prof. Dr. Manfred Bayer, President of TU Dortmund:

Robust time crystals in semiconductors

Abstract

We demonstrate time crystals (TCs) in the coupled electron-nuclei system of a tailored semiconductor, featuring spontaneous breaking of the translational symmetry in time. Our study demonstrates an extremely robust implementation of a TC across a wide range of its control parameters. The coherence time of the crystal is limited only by the experimental measurement time and can extend up to several hours. Varying the control parameters, the TC period in the seconds-range can be varied by more than an order of magnitude. Leaving this island of stability, chaotic motion can be demonstrated, signaling melting of the TC. Varying the protocol of optical pumping, both the continuous [1] and discrete crystal regimes can be achieved, whereby in the latter case of modulated pumping a rich phenomenology of parametric resonances is observed.

[1] A. Greilich, N.E. Kopteva, A.N. Kamenskii, P.S. Sokolov, V.L. Korenev, and M. Bayer, Nature Physics, in press.



All of you interested in physics are cordially invited!

Contact: Prof. Dr. Mohamed Benyoucef, Quantum Nano Photonics, More Information: uni-kassel.de/go/physikalisches_kolloquium