

Seminar: Hard Condensed Matter Theory

Room: Media Raum, 03-431 (Staudinger Weg 9)

Time: August 2th, 2016 at 14:00

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Bottleneck accumulation of hybrid bosons in a ferrimagnet

An ensemble of spin wave quanta, also known as magnons, can be treated as a Bose gas of weakly interacting quasi-particles. The excessive excitation of magnons in the system causes an increase in the chemical potential of a thermalized magnon gas. When it becomes equal to the minimal magnon energy a magnon Bose-Einstein condensate (BEC) may form at this spectral point. However, magnon-phonon interaction processes can significantly modify condensation scenario. Our observations of the magnon BEC in a single-crystal film of yttrium iron garnet (Y₃Fe₅O₁₂) by means of wavevector-resolved BLS spectroscopy resulted in the discovery of a novel condensation phenomenon mediated by magneto-elastic interaction: A spontaneous accumulation of hybrid magnon-phonon bosonic quasi-particles at the intersection of the lowest spin-wave mode and a transversal acoustic wave.

All interested are cordially welcome!