Seminar: Hard Condensed Matter Theory

JG|U

JOHANNES GUTENBERG
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Room: Galilei room, 01-128 (Staudinger Weg 9**)**

Time: Tuesday, 16.02.2016, 14:00

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Rayleigh-Jeans condensation of pumped magnons in thin film ferromagnets

We show that the formation of a magnon condensate in thin ferromagnetic films can be explained within the framework of a classical stochastic non-Markovian Landau-Lifshitz-Gilbert equation where the properties of the random magnetic field and the dissipation are determined by the underlying phonon dynamics. We have numerically solved this equation for a tangentially magnetized yttrium-iron garnet film in the presence of a parallel parametric pumping field. We obtain a complete description of all stages the nonequilibrium time evolution of the magnon gas which is in excellent agreement with experiments. Our calculation proves that the experimentally observed condensation of magnons in yttrium-iron garnet at room temperature is a purely classical phenomenon which should be called Rayleigh-Jeans rather than Bose-Einstein condensation.

All interested are cordially welcome!