MA 39: Invited Talk Hillebrands

Time: Friday 10:15–10:45 Location: HSZ 04

Invited Talk MA 39.1 Fri 10:15 HSZ 04

Magnon gases and condensates — •Burkard Hillebrands — FB Physik and Forschungszentrum OPTIMAS, TU Kaiserslautern, Germany

A magnon gas is an excellent model system for the investigation of interacting bosonic particles and thus for correlated systems in general. Its potential is due to the wide controllability of the magnon density as well as of the spectral properties influencing the magnon-magnon interaction. The recent observation of Bose-Einstein condensation of magnons at room temperature demonstrates this clearly.

The most effective mechanism to inject magnons into the gas is parametric pumping which creates a condensate of photon-coupled magnon pairs. Formation, thermalization and disintegration of this condensate as well as its interaction with the Bose-Einstein condensate of magnons constitute a hot topic of research.

We use time-, space-, phase- and wave-vector sensitive Brillouin light scattering spectroscopy in combination with conventional microwave techniques to reveal the dynamics of magnon gases and condensates. It is a powerful instrument to investigate the energy transfer inside of the parametrically driven magnon gas, to determine the exact spectral positions of the involved magnon groups, and to observe the pumping-free evolution of the condensates. The role of the electromagnetic pumping field in the behaviour of the magnon gas is of particular interest.

Financial support by the DFG (SFB/TRR 49) is acknowledged.