



Seminar über Physik der Kondensierten Materie

(WA KOMET)

Room: Lorentz-Room (05-127)

Time: 14:00 st.

14.05.2014

Herr Prof. Dr. Yoshiro Hirayama
(Tohoku University)

Hyperfine Interaction in Semiconductor Quantum Systems

Hyperfine interaction has been applied to highly-sensitive resistively-detected (RD) nuclear-magnetic-resonance (NMR) in semiconductor quantum structures. The RD technique enables us to enjoy NMR measurement in two- and one-dimensional systems. Many interesting features have been clarified for low-dimensional electron spins by using such measurements. Recently, by using nuclear magnetometry measurement of bilayer GaAs systems, we found collective phenomena of ensemble of nuclear spins triggered by electron spin fluctuations and clarified characteristics of nuclear spin diffusion in GaAs quantum structures. We have also developed nuclear resonance mediated by oscillating electric field, resulting in a successful magnetic-resonance-imaging (MRI) in microscopic scale. Application of highly-sensitive RD-NMR to InSb heterostructures is also discussed in the presentation.

All interested are cordially welcome!

Organize your personal meeting with the lecturer by contacting

I. Berber