



Seminar

Description of a dissipative quantum spin dynamics with a Landau-Lifshitz/Gilbert like damping and complete derivation of the classical Landau-Lifshitz equation

Dr. Robert Wieser

Time: 10:00am, April. 17, 2015 (Friday)

时间: 2015年04月17日 (周五) 上午10:00

Venue: Room W563, Physics Building, Peking University

地点: 北京大学物理楼 西563

Abstract

Originally the Landau-Lifshitz equation has been introduced as a phenomenological classical equation to describe the dynamics of domain walls. However, the Landau-Lifshitz equation can be completely derived from quantum mechanics, even the phenomenological damping term. Starting point is the assumption of a non-Hermitian Hamilton operator to take energy dissipation into account. The corresponding quantum mechanical spin dynamics along with the time dependent Schrödinger, Liouville and Heisenberg equation will be described and the similarities and differences between classical and quantum mechanical spin dynamics will be discussed.

In the second part of the talk I will present some of my results using a classical description and discuss the embedding of the Landau-Lifshitz-Gilbert equation in science.

About the speaker

Dr. Robert Wieser got PhD from University of Duisburg-Essen under the supervise of Prof. Nowak (2006) and Habilitation from University of Hamburg (2014). After granted PhD in 2006, he did a postdoc research in Wiesendanger group at the University of Hamburg, working with Prof. Wiesendanger and Prof. Vedmedenko. His research field is magnetism and spintronics, such as domain wall motion in ferromagnetic wire, spin dynamics in magnetic nanostructure and quantum effect in spin dynamics.