

Seminar: Hard Condensed Matter Theory

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

Time: Tuesday, 26.01.2016, 14:00

Roberto Raimondi

UNIVERSITA' DEGLI STUDI ROMA TRE

Spin current swapping and spin Hall effect in a 2DEG

In this talk I will present some of the results obtained over the last year about spin-orbit induced effects in a two-dimensional electron gas. At first I will discuss the spin current swapping effect according to which a spin current flowing in the i direction with spin polarization along the j axis is converted into a spin current flowing in the j direction with spin polarization along the i axis.

I will analyze the circumstances under which to observe the effect and its connection with the spin Hall effect. As a second topic I will focus on the spin Hall effect due to the skew-scattering mechanism induced by phonon scattering. A comparison will be made with the standard skew-scattering due to impurities and the consequences for the temperature dependence of the spin Hall angle will be analyzed. Finally, I will present a model with a striped Rashba spin-orbit coupling, which could possibly be realized in LAO/STO interfaces. Such a non homogeneous spin-orbit coupling may give rise to a spin Hall effect robust with respect to impurity scattering.

All interested are cordially welcome!