

SEMINAR

RASHBA SPLITTING AND RASHBA POLARIZATION

IN ANGLE RESOLVED PHOTOEMISSION

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Origin of the spin structure of non-magnetic surfaces with strong spin-orbit interaction will be discussed, as well as angle and spin-resolved photoemission from these systems.

Starting with a complex-band-structure view on the Rashba splitting of surface states, a qualitative analysis of the Rashba effect for surface as well as for bulk continuum states will be given [1]. Special attention will be paid to the spin polarization of the photocurrent from bulk continuum states, which has been recently experimentally observed on Bi(111) [2] and W(110) [3]. The role of photoemission final states and dichroism effects will be discussed.

Calculations of the spin-resolved photocurrent from Bi(111), W(110), and the Ag₂Bi surface alloy within an ab initio theory of photoemission will be presented based on the one-step formalism, in which the final states are treated as time-reversed LEED states. The theory employs the Bloch waves approach to electron scattering within the augmented plane waves formalism [4]. The spin-orbit coupling is shown to lead to a Rashba-type spin polarization of the angle-resolved photocurrent from bulk continuum states of a non-magnetic system.

- [1] E.E. Krasovskii and E.V. Chulkov, Phys. Rev. B 83, 155401 (2011);
E.E. Krasovskii, arXiv:1310.6893 [cond-mat.mtrl-sci] (2013).
[2] A. Kimura et al., Phys. Rev. Lett. 105, 076804 (2010).
[3] A.G. Rybkin et al., Phys. Rev. B 86, 035117 (2012).
[4] E.E. Krasovskii, Phys. Rev. B 70, 245322 (2004).

REMINDER

Prof. Dr. Eugene Krasovskii
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21 February, 2014 – 12:00 p.m.
Place: ICN2 Seminar Room, ICN2 Building, UAB
Invited by: Dr. Aitor Mugarza