8th May 2014 - 11:00 a.m.
Building 99, Ground Floor, Seminar Room III

Patrik Grychtol

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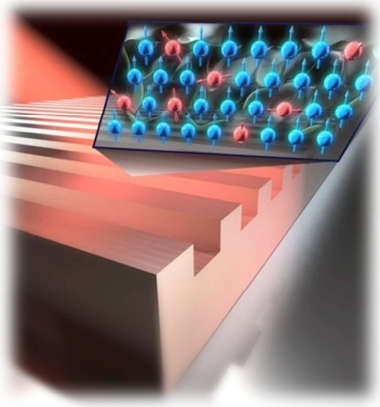

Element-Selective and Time-Resolved Magnetic Investigations in the Extreme Ultraviolet Range

The presentation deals with the application of synchrotron and laser-based higher harmonic generated (HHG) extreme ultraviolet (EUV) radiation that has proven to be extremely useful for studies of element-specific dynamics in magnetic materials on pico- to femtosecond time scales. Over the last years, these light sources have been successfully utilized to access resonantly enhanced magnetic contrast at the *M* absorption edges of the 3d ferromagnets Fe, Co and Ni, thereby providing a wealth of opportunities for a greater fundamental understanding of correlated phenomena in solid-state matter. Specifically, novel insights on ultrafast (few-femtosecond) nanoscale phenomena were uncovered by capturing exchange interaction as well as spin transport dynamics in complex multi-species magnetic materials. To this end, a pump-probe technique has been developed exploiting the transversal magneto-optical Kerr effect (T-MOKE) in combination with the nonlinear up-conversion of intense femtosecond laser pulses - HHG. Besides elaborating on this recently established method and key results, it will be demonstrated how to efficiently generate circularly-polarized higher harmonics that are bright enough for measurements of the x-ray magnetic circular dichroism (XMCD).

FS-LA Seminar, Host: Ingmar Hartl