EINLADUNG
ZUM SONDERSEMINAR

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Developing Time Resolved SPLEEM

Understanding and controlling of the magnetization reversal process and its time limits will provide new possibilities for ultrafast switching devices. It is important to develop methods to image ultrafast magnetization dynamics with high spatial and temporal resolution. Time resolved spin polarized low energy electron microscopy is one of choices for this goal.

In this talk, we describe the design and commission of a novel aberration-corrected low electron emission microscope (AC-LEEM). A third magnetic prism array is implemented to the standard AC-LEEM with two prism arrays, allowing the introduce of a ultrafast spin-polarized electron sources besides the standard cold field emission electron source without degrading its spatial resolution. The high electron-optical symmetry of the AC-LEEM are considered while we design the electron optics of the ultrafast spin-polarized electron source, in order to minimize deleterious effects of space-charge and time broadening while maintaining full control of electron spin. A spatial resolution of 2 nm and temporal resolution of 10 ps are expected in the future time resolved aberration-corrected spin-polarized LEEM (TR-AC-SPLEEM). The commission of the AC-LEEM has been successfully finished with the cold field emission source, with a spatial resolution below 2 nm. In parallel, studies on numerical calculations showed interesting results on magnetic vortex switching. The multiply vortex core switching process has been systematically studied in response to pulsed field and alternating field.

Der Gast wird betreut von Prof. Dr. M. Aeschlimann
GÄSTE SIND HERZLICH WILLKOMMEN!