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【715】Investigating ultrafast magnetization dynamics with circularly polarized soft x-ray FEL radiation

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The planned SwissFEL ATHOS beamline features all necessary parameters for femtosecond time-resolved experiments in magnetism using x-ray absorption spectroscopy and circular dichroism: intense fs soft x-ray pulses with linear and circular polarization.
An exemplary measurement investigates spin currents between two magnetic films separated by a spacer layer: the upper, fs laser pulse excited film launches a spin current which is detected in the lower layer. Such a structure did surprisingly show fs magnetization enhancement in the lower film. X-ray spectroscopy can be used in a unique way to quantitatively probe the spin and orbital moments separately for each layer with femtosecond resolution.

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