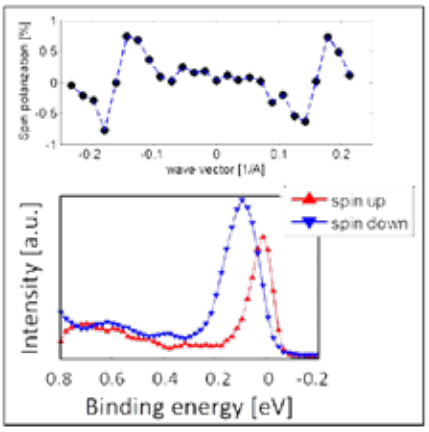
FOCUS FERRUM & SPIN Switch

3D SPIN VECTOR DETECTION

For routine and fast spin resolved PES/ARPES

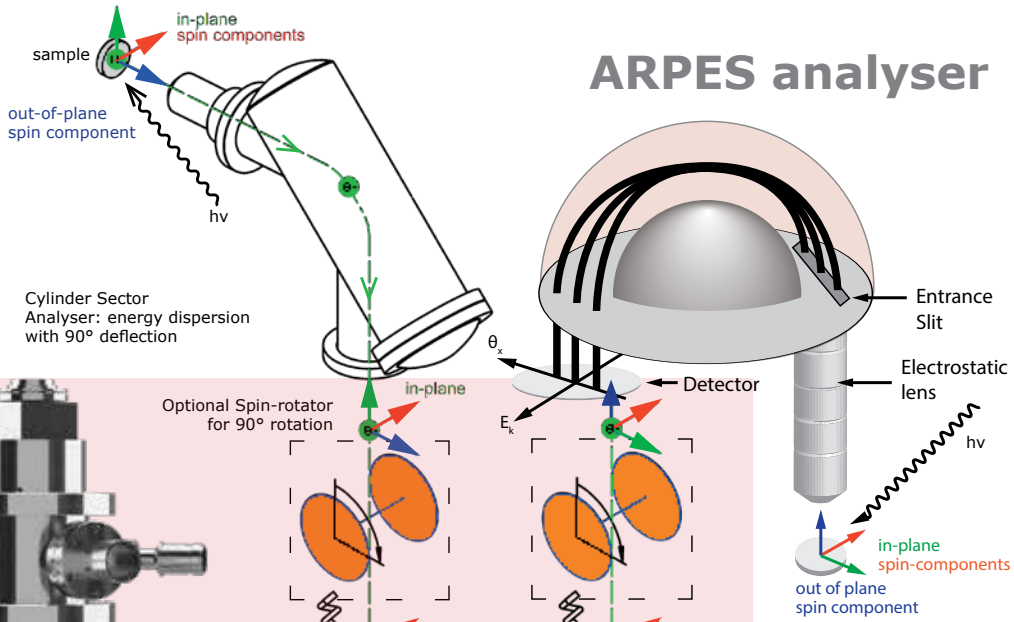
Benefits

- User friendly operation
- Available for all established ARPES analyser
- Ultimate sensitivity (figure of merit)
- Highly efficient SEMPA



Au(111) Spin-split surface state.

Easy SPIN



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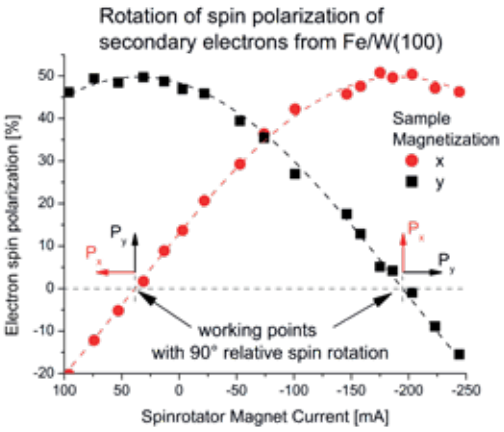
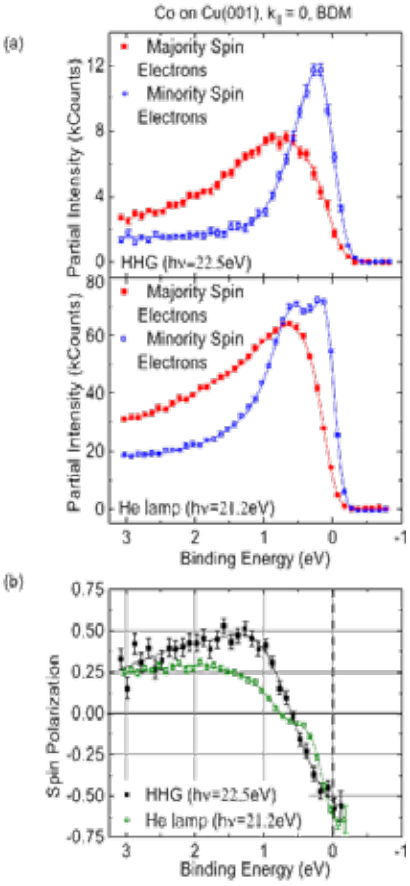
Characterization of the SPIN^{Switch}



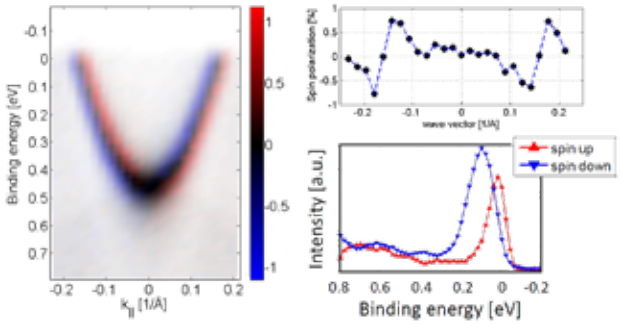
The spin detection in the FERRUM is based on Very-Low-Energy Electron Diffraction (VLEED) where an incoming electron beam is scattered at a magnetized and oxygen passivated iron film grown on a tungsten crystal.
The scattered electron beam is directed onto a channeltron.
The SPIN^{Switch} electron optics in front of the FERRUM selects the spin direction of interest to be measured.
Hence all 3 D spin components are accessible w/o sample rotation or an additional 90° deflection.

Spin polarized UPS

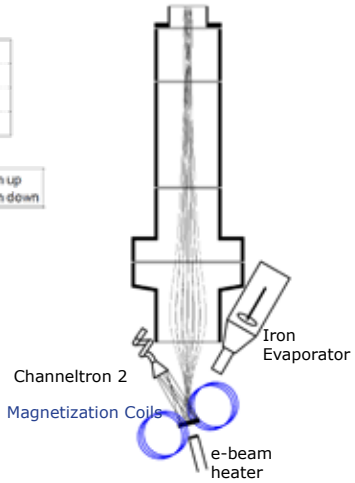


Data: M. Plötzing et al.Rev.Sci.Instrum., 87 (2016)

Spin polarized ARPES

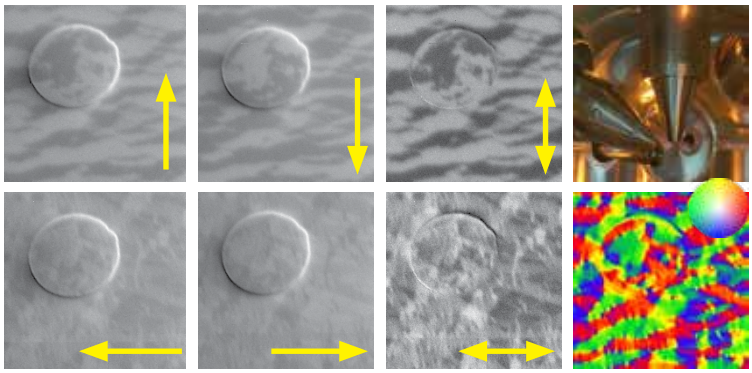


Au(111):Spin-split surface state
Data courtesy L. Plucinski, PGI 6, FZ Jülich



FERRUM operation principle for spin resolved measurements

SEMPA using FERRUM



1st SEMPA data acquired with FERRUM detector: Fe 1 nm on patterned CFB/Si, FoV ~40 µm
Data courtesy of Chanyong Hwang, Center for Nanometrology KRISS

FERRUM Specifications

Scattering energy:	6.3±0.1 eV
Sherman function:	S=0.29±0.01
Reflectivity (I/I_0):	R>10.6%
Figure of merit :	FoM=8,8x10^{-3}
Lifetime (without preparation):	Several weeks (!!)

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