

CASSIOPEE: Combined Angular- and Spin-resolved Spectroscopies Of PhotoEmitted Electrons

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Areas of application, instrumentation and methodologies used

Energy range: 8 to 1500 eV

The CASSIOPEE beamline is a soft X-ray beamline dedicated to high angle and energy resolution photoemission, spin-resolved photoemission and resonant spectroscopy on solids.

Adjustable polarization (two undulators) – High-resolution plane-grating monochromator with VLS (Varied Line Spacing) and VGD (Varied Groove Depth) to achieve greater efficiency and greater spectral purity over the entire available energy range.

Two branches operate alternately: spin-resolved photoemission (SPES) and angle-resolved photoemission spectroscopy (ARPES). Molecular beam epitaxy chamber for sample growth, preparation and characterization.

Sample environment: three UHV chambers for preparation and measurements, low temperature measurements, magnetic field for the SPES branch only.

Major disciplines: Electronic and magnetic properties of low-dimensional systems

- ✓ Strongly correlated systems: complex oxides (cobaltates, pnictides, cuprates, vanadates ...) / Surfaces and interfaces (Sn/Ge, Sn/Si, Alkalis/Si: B ...)
- ✓ Topological insulators, graphene
- ✓ Materials for spintronics: magnetic tunnel junctions, Heusler alloy thin films
- ✓ Surfaces/ interfaces /nano-objects: metal /metal, metal/semiconductor, semiconductor /semiconductor, molecules/surfaces, biological species/surfaces, oxide surfaces, oxide thin films.