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LOREA: the ARPES beamline at ALBA for quantum materials

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LOREA, the ninth beamline of the ALBA synchrotron radiation source, started its operation in 2021 and is dedicated to electronic structure investigation of quantum materials by means of Angle Resolved Photo-Emission Spectroscopy (ARPES).

The photon energy range of the beamline (10-1000 eV) with continuously variable polarization and resolving power of more than 10^4 in the whole range allows the complete characterisation of samples. A small spot size of about $10 \times 10 \mu\text{m}^2$ and the presence of 4 electrical contacts in the sample stage enables LOREA to characterise very small samples and simple devices.

The ARPES detector is an MBS A-1 hemispherical analyzer with very high energy and angular resolution (better than 1meV and 0.1°) and the fast Fermi surface mapping mode. It will be upgraded in 2022 with a spin detector to perform spin-resolved ARPES.

The 6-axes cryo-manipulator can reach temperatures lower than 7.5K.

The main chamber is connected to a central radial distribution chamber and, through it, to all other vessels, including chambers for in situ UHV deposition and characterization, load lock and sample storage, docking of vacuum suitcase.

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