

Title: X-ray spectroscopy at the Extreme condition Beamline of Sirius source: study of rare earths and actinides

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The interaction between 4f-5d orbitals in rare earths and 5f-6d in actinides is often found to rule the macroscopic properties of these materials. However, spectroscopic techniques that assess the contributions from these orbitals selectively has be scarce. Here I will show examples of x-ray spectroscopy studies in strongly correlated materials containing rare earth and actinide to assess their magnetic and electronic hybridization changes as a function of applied pressure with orbital selectivity. This research, among others, will benefit with the advent of the new Brazilian synchrotron light source (SIRIUS) under construction, as it is designed to be one of the most advanced machines in the world when it comes on-line in 2019. Low emittance and high brightness will enable many challenging experiments, opening up new possibilities for research in several areas. In particular, I will briefly describe the extreme condition beamline (EMA) at SIRIUS with the goal of allowing synchrotron experiments in conditions of the pressure / temperature / magnetic field phase diagrams close to where is often found quantum critical points and coexistence of magnetism and unconventional superconductivity.