

Quantum materials are at the heart of current condensed matter research and have the potential to revolutionize many aspects of everyday life. In this talk, I will introduce you to the world of electronic interactions and intertwined dynamics that are ubiquitous in the field of quantum materials. After an introduction on the importance of exploring electron properties with momentum resolution, I will discuss in detail angle-resolved photoemission spectroscopy (ARPES) and its extension into the time domain (TR-ARPES), powerful tools for exploring dynamic electron interactions in solids [Rev. Mod. Phys. 96, 015003 (2024)]. I will present the unique capabilities of the new TR-ARPES system at the Advanced Laser Light Source (ALLS) user facility at INRS-EMT, and show some unprecedented data revealing the low-temperature normal state of cuprate high-temperature superconductors.