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Atomic-scale wavefunctions and dynamics inside the hidden order compound URu2Si2 L. ANDREW WRAY, New York Univ NYU, JONATHAN DENLINGER, SHIH-WEN HUANG, Advanced Light Source, Lawrence Berkeley National Laboratory, NICHOLAS BUTCH, NIST, M. BRIAN MAPLE, Department. of Physics, U. of California, San Diego, ZAHID HUSSAIN, YI-DE CHUANG, Advanced Light Source, Lawrence Berkeley National Laboratory — Understanding the emergent wavefunctions of correlated electron systems requires experimental probes that can resolve electronic states on an atomic scale. However, imaging techniques such as STM that resolve single atoms do not provide a good way to distinguish the entangled symmetries of nearby electrons. I will talk about how energy-resolved scattering measurements performed with resonance-tuned X-rays can open a unique window into many-body entangled states on an atomic length scale and femtosecond time scale. The presentation will focus on data that unveil low temperature wavefunction symmetries and energetics of uranium electrons in the "hidden order" compound URu2Si2.

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