

Abstract Submitted
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High Resolution Neutral Atom Microscope IGAL BUCAY, RODRIGO CASTILLO-GARZA, GEORGIOS STRATIS, MARK RAIZEN, University of Texas at Austin — We are developing a high resolution neutral atom microscope based on metastable atom electron spectroscopy (MAES). When a metastable atom of a noble gas is near a solid, a surface electron will tunnel to an empty energy level of the metastable atom, thereby ejecting the excited electron from the atom. The emitted electrons carry information regarding the local topography and electronic, magnetic, and chemical structures of most hard materials. Furthermore, using a chromatic aberration corrected magnetic hexapole lens we expect to attain a spatial resolution below 10 nm. We will use this microscope to investigate how local phenomena can give rise to macroscopic effects in materials that cannot be probed using a scanning tunneling microscope, namely insulating transition metal oxides.

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