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Mott Kondo Insulating Behavior in Iron-Oxychalcogenides BYRON FREELON, Physics Department, Massachusetts Institute of Technology, Cambridge, MA, YUHAO LIU, Lawrence Berkeley National Laboratory, JUNG-LENG CHEN, Department of Physics, Tamkang University, LUIS CRACO, Institutoi de Fisica, Universidade Federal de Mato Grosso, Cuiaba, Brazil, MUKUL LAAD, The Institute of Mathematical Sciences, CIT Campus, Chennai, India, STEFANO LEONI, School of Chemistry, Cardiff University, JIAQI CHEN, LI TAO, MINGHU FANG, Department of Physics, Zhejiang University, Hangzhou, China, ROXANA FLAUCA, ZAHRA YAMANI, Canadian Neutron Beam Centre, National Research Council, Chalk River Labs, Chalk River Ontario, Canada, YI-SHENG LIU, Advanced Light Source, Lawrence Berkeley National Laboratory, Berkeley, CA, CHINGLIN CHANG, Department of Physics, Tamkang University, J.-H. GUO, ZAHID HUSSAIN, Advanced Light Source, Lawrence Berkeley National Laboratory, Berkeley, CA — The findings of unconventional high-Tc superconductivity (HTSC) in Fe arsenides and selenides have reinvigorated HTSC research. The outstanding debate over how the normal state gives way to HTSC in cuprates has emerged in discussions on possible HTSC mechanisms in Fe-based superconductors. Does Fe-based HTSC result as a pairing instability of a conventional Landau-Fermi liquid (LFL), or as one of a non-LFL, akin to the cuprates? One possible way to address this important question is to investigate Fe-based materials that exhibit a Mott insulating parent phase as in the cuprates. Here we present a study of such materials. We performed a combined experimental-theoretical investigation of the Fe-oxychalcogenides (FeOCh) series $La_2O_2Fe_2OM_2$ (M =S, Se), the latest among the Fe-based materials with the potential to show unconventional high-Tc superconductivity (HTSC).

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