

Electronic structure and correlations in layered nickel oxides and arsenides – how to support superconductivity?

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We have performed high resolution ARPES measurements on the layered nickel oxides $R_4Ni_3O_{10}$, $R_4Ni_3O_8$ ($R=La, Pr$) that are analogs to the cuprate superconductors, and on the family $(La,Ba)Ni_2As_2$ that are analogs to the Fe-based superconductors. We study the Fermi surfaces, band dispersions/mass enhancements, energy-dependent electronic scattering rates, and (for the arsenides) charge density wave physics. Through a comparison with electronic structure measurements and with results from the cuprates and Fe superconductors I discuss the critical electronic structure and correlation aspects of these materials for supporting superconductivity.