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Symmetry dependent excitations in pure and titanium doped Sr_2RuO_4 TIM KIDD, TONICA VALLA, HAN JIN NOH, JOHN RAMEAU, PETER JOHNSON, Brookhaven National Laboratory, YOSHITERU MAENO, Kyoto University — While Sr_2RuO_4 is well known for its exotic superconductivity, the normal state properties of the system are also of great interest. The system is close to both ferro- and anti-ferromagnetic instabilities, and the system displays both Fermi liquid and anomalous transport properties at different temperature regimes. Doping with small amounts of titanium has a strong effect on the system, radically changing the low temperature transport properties as well as transforming the ground state into a spin density wave with short range order. The electronic structure that gives rise to such interesting behavior is quite complex, with three bands that can be divided into both quasi-2D and quasi-1D subsets according to their orbital symmetry. Measurements of individual bands using photoemission spectroscopy reveal that the scattering mechanisms for each dimensional subset are quite different, with each contributing to different aspects of the normal state transport. From measurements of the electronic self-energy, the strength and energy scale of the interactions in the 2D band show little change with Ti doping, while the 1D bands present a more complicated picture.

Tim Kidd
Brookhaven National Laboratory

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