## Anisotropy in the electronic structure of superconducting 115's

**F. Ronning**[a], E.D. Bauer[b], M. Altarawneh[a], N. Harrison[a], J.-X. Zhu[a], J.D. Thompson[a], H.B. Rhee[b], and W. Pickett[b]

[a]Los Alamos National Laboratory, Los Alamos, NM, USA
[b]U.C. Davis, Davis, CA, USA

Experimentally and theoretically, reduced dimensionality appears to be good for superconductivity. However, reduced dimensionality can refer to either the spin, lattice, or charge degrees of freedom. We report on our investigation of how the anisotropy of the electronic structure influences superconductivity in the Ce- and Pu- based 115 superconductors. In $CePt_2In_7$, LDA calculations indicate that the system has a Fermi surface which possesses stronger anisotropy than $CeRhIn_5$. This anisotropy is confirmed by quantum oscillation measurements on high quality single crystals. However, the superconducting transition temperature was not enhanced by this reduction in dimensionality. This suggests that perhaps the electronic structure does not play a significant role for superconductivity. However, since no statement of equality of the spin and lattice degrees of freedom can yet be made between the two systems such statements are a bit premature. We further report on our theoretical investigation of the spin and charge degrees of freedom in the superconductors $PuCoIn_5$, $PuCoGa_5$, and the non-superconductor $PuPt_2In_7$. In this case, one may speculate that the differences in the electronic structure can explain the presence of superconductivity, and lack thereof in different Pu-based compounds.