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FLEX calculation of the pairing state symmetry and quasiparticle excitations for $SrRu_2O_4$ JOHN DEISZ, Department of Physics, University of Northern Iowa — We calculate the superconducting phase diagram for a two-dimensional, three-band tight-binding model of $SrRu_2O_4$ using the fluctuation exchange approximation (FLEX). Electron interactions are modeled by an atomically-local interaction with intra-band, inter-band and exchange terms and an atomically-local spin-orbit interaction is included as well. Preliminary results suggest that FLEX produces a singlet-pairing state with $d_{x^2-y^2}$ orbital symmetry, a result that is not in agreement with many experimental results. However, we do find that the values for the interaction strengths that are required to generate $T_c \simeq 1.5\,K$ lead to normal state quasiparticle line widths that are in reasonable agreement with experimental results.

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