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Fermiology and Superconductivity of $LaNiGa_2$[1] DAVID J. SINGH, Oak Ridge National Laboratory — $LaNiGa_2$ has been identified as a possible centrosymmetric triplet superconductor based on observations of time reversal symmetry breaking in μSR experiments. Here we report calculations of the Fermiology and related properties. In spite of the seemingly layered crystal structure, the Fermi surface has several large sheets and is only moderately anisotropic, so that the material is best described as a three dimensional metal. These include sections that are open in the in-plane direction as well as a section that approaches the zone center. The density of states is high and primarily derived from Ga p states, which hybridize with Ni d states. Comparing with experimental specific heat data, we infer a superconducting $\lambda \leq 0.55$, which implies that this is a weak to intermediate coupling material. Ni occurs in a nominal d^{10} configuration in this material, which places the compound far from magnetism. The implication is that this is most likely a standard electron phonon mediated s-wave superconductor.

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