

Abstract Submitted
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Many-body calculation of spin-orbit induced mixed-parity pairing in Sr_2RuO_4 JOHN DEISZ, TIM KIDD, Department of Physics, University of Northern Iowa — The unusual superconducting state in Sr_2RuO_4 has long been viewed as being analogous to a superfluid state in liquid ^3He . Nevertheless, calculations based on this odd-parity state are presently unable to completely reconcile the properties of Sr_2RuO_4 . Using a self-consistent quantum many-body scheme that employs realistic parameters, we are able to model several signature properties of the normal and superconducting states of Sr_2RuO_4 . We find that the dominant component of the model superconducting state is of even parity and closely related to superconducting state for the high- T_c cuprates although a smaller odd-parity component is induced by spin-orbit coupling. This mixed pairing state gives a more complete representation of the complex phenomena measured in Sr_2RuO_4 .

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