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Strong spin-orbit coupling effects on the Fermi surface of Sr_2RuO_4 and Sr_2RhO_4 ANDREA DAMASCELLI, University of British Columbia, MAURITS HAVERKORT, MPI Stuttgart, ILYA ELFIMOV, University of British Columbia, HAO TJENG, University of Cologne, GEORGE SAWATZKY, University of British Columbia — We present a first-principle study of spin-orbit coupling effects on the Fermi surface of Sr_2RuO_4 and Sr_2RhO_4 [1]. For nearly degenerate bands, spin- orbit coupling leads to a dramatic change of the Fermi surface with respect to non-relativistic calculations; as evidenced by the comparison with experiments on Sr_2RhO_4, it cannot be disregarded. For Sr_2RuO_4, the Fermi surface modifications are more subtle but equally dramatic in the detail: spin-orbit coupling induces a strong momentum dependence, normal to the RuO_2 planes, for both orbital and spin character of the low-energy electronic states. These findings have profound implications for the understanding of unconventional superconductivity in Sr_2RuO_4. [1] M.W. Haverkort *et al.*, Phys. Rev. Lett. **101**, 026406 (2008).

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