

Abstract Submitted  
for the MAR14 Meeting of  
The American Physical Society

**Superconductivity in  $\text{Sr}_2\text{RuO}_4$ : Two-Dimensional versus One-Dimensional Origin of Pairing** WERNER HANKE, CHRISTIAN PLATT, RONNY THOMALE, Institute for Theoretical Physics, University of Wuerzburg, WERNER HANKE, CHRISTIAN PLATT, RONNY THOMALE TEAM — There is growing experimental evidence that  $\text{Sr}_2\text{RuO}_4$  displays an unconventional superconducting (SC) state with a chiral p-wave, i.e. “p+ip” symmetry. The continuing strong interest in this superconductor has recently been fuelled by speculations of the possible realization of topologically protected edge modes. However, there exists also a variety of challenges for the chiral p-wave state, such as a power-law behavior in the specific heat, no clear observation of edge currents and conflicting pictures for the pairing mechanism (2D versus 1D). In this contribution, we discuss our recent theory of SC in a 3-orbital model of  $\text{Sr}_2\text{RuO}_4$  [1], and extensions thereof, in light of these challenges, in particular, of recent tunneling spectroscopy data, which were interpreted as evidence for a quasi-1D origin for SC [2].

[1] Q. H. Wang, C. Platt, Y. Yang, C. Honerkamp, F. C. Zhang, W. Hanke, T. M. Rice, R. Thomale, *Eur. Phys. Lett.* 104, 17013 (2013).

[2] I.A. Firmo, S. Lederer, C. Lupien, A. P. Mackenzie, J. C. Davis, and S. A. Kivelson, *Phys. Rev. B* 88, 134521 (2013)

Christian Platt  
Institute for Theoretical Physics, University of Wuerzburg

Date submitted: 15 Nov 2013

Electronic form version 1.4