

Abstract Submitted  
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**Ferromagnets without inversion symmetry - room for superconductivity?**<sup>1</sup> ANDRIY NEVIDOMSKYY, Rutgers University, JACOB LINDER, ASLE SUDBØ, Norwegian University of Science and Technology, Trondheim, Norway — Motivated by the recent discoveries of ferromagnetic and non-centrosymmetric superconductors, we present a mean-field theory [1] for a superconductor that *both* lacks inversion symmetry and displays ferromagnetism, a scenario which is believed to be realized in UIr under applied pressure [2]. We study the interplay between the order parameters to clarify how superconductivity is affected by the presence of ferromagnetism and spin-orbit coupling. We find that the spin-orbit coupling seems to enhance both ferromagnetism and superconductivity in both singlet and triplet channels. We discuss our results in the context of the heavy fermion superconductor UIr and analyze possible symmetries of the order parameter.

[1] J. Linder, A. H. Nevidomskyy, and A. Sudbø, Phys. Rev. B **78**, 172502 (2008).

[2] T. Akazawa et al., J. Phys. Cond. Mat. **16**, L29 (2004); J. Phys. Soc. Jpn. **73**, 3129 (2004).

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