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Functional Renormalization Group Study of Iron-based Superconductors FA WANG, Department of Physics, Massachusetts Institute of Technology, Cambridge, MA, HUI ZHAI, Institute for Advanced Study, Tsinghua University, Beijing, China, DUNG-HAI LEE, Dept of Physics, University of California Berkeley, Berkeley, CA; Materials Sciences Division, Lawrence Berkeley National Laboratory, Berkeley, CA — We report functional renormalization group(FRG) results on iron-based superconductors, in particular LaFePO and Fe(Se,Te). Following the previous study by the same authors for LaFeAsO [Phys. Rev. Lett., 102, 047005 (2009)], we use tight-binding models of five Fe d-orbitals fit to the band structure calculations, and use on-site Kanamori interactions as initial condition for the RG flow. For both cases we found that the s_{\pm} pairing is the leading instability, with opposite sign of pairing order parameters between electron and hole Fermi surfaces. The result of Fe(Se,Te) is a fully gapped s_{\pm} pairing. However for LaFePO the gap has accidental nodes on electron Fermi surfaces, in sharp contrast to Fe(Se,Te) and the previous result of LaFeAsO. We propose several possible reasons for this nodal s_{\pm} pairing in LaFePO. Comparison to and implication for experiments will be briefly discussed.

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