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Superconductivity in two-leg ladder iron selenides WEICHENG LV, ELBIO DAGOTTO, Department of Physics and Astronomy, University of Tennessee and Materials Science and Technology Division, Oak Ridge National Laboratory, GEORGE MARTINS, Department of Physics, Oakland University — Recently, evidence of superconductivity has been discovered in the single-layer potassium-doped iron selenide that consists of weakly coupled two-leg iron ladders (Wei Li *et al.*, arXiv:1210.4619). Using a self-consistent mean-field approximation, we analyze the pairing symmetry and structure of the multi-orbital t - J model defined in these two-leg ladder systems. Similar to the case of the iron pnictides, a modified s -wave pairing state is stabilized by the next-nearest-neighbor superexchange J_2 . The presence of competing states will be discussed. Our result demonstrates the potential importance of the local magnetic couplings in iron-based superconductors.

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