Abstract Submitted
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Topological properties in Iron-Based Superconductors[1] JIANGPING HU, Purdue University, NINGNING HAO, X.X. WU, Institute of Physics, CAS — We show the existence of non-trivial topological properties in Iron-based superconductors. Several examples are provided, including (1) the single layer FeSe grown on SrTiO3 substrate, in which an topological insulator phase exists due to the band inversion at M point; (2) CaFeAs2, a staggered intercalation compound that integrates both quantum spin hall and superconductivity in which the non-trivial topology stems from the chain-like As layers away from FeAs layers; (3) the Fe(Te,Se) thin films in which the nontrivial Z2 topological invariance originates from the parity exchange at ? point that is controlled by the Te(Se) height. These results lay ground for integrating high Tc superconductivity with topological properties to realize new emergent phenomena, such as majorana particles, in iron-based high temperature superconductors. Reference: (1) NingNing Hao and Jiangping Hu, Topological phases in the Single Layer FeSe"; Phys. Rev. X 4, 031053 (2014). (2) X Wu, C Le, Y Liang, S Qin, H Fan and J. P. Hu Effect of As-chain layers in CaFeAs 2" Phys. Rev. B 89 205102 (2014) (3) X. Wu, S. Qin, Y. Liang, C. Le, H. Fan, and J. Hu, CaFeAs2: a Staggered Intercalation of Quantum Spin Hall and High Temperature Superconductivity," arXiv:1405.6401 (2014).

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