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Impact of the tetrahedral distortion in the superconducting and magnetic properties of iron pnictides BELEN VALENZUELA, MARIA JOSE CALDERON, Instituto de Ciencia de Materiales de Madrid (ICMM-CSIC), ELENA BASCONES, Instituto de Ciencia de Materiales de Madrid, GROUP: STRONGLY CORRELATED ELECTRON SYSTEMS TEAM — The origin of magnetism and superconductivity in iron pnictides is unknown. An added complexity in these materials is the strong impact in the electronic properties brought by small distortions of the As-Fe tetrahedra. We have proposed a five orbital tight binding model using the Slater-Koster framework that with *just four* parameters reproduce the bands and Fermi surface found with first principle calculations [1]. The good agreement between our results and DFT predictions extends to the orbital weight of each band. Using this model we study the magnetic and superconducting state and analyze how it depends on the distortion of the tetrahedron.

[1] M.J. Calderón, B. Valenzuela and E. Bascones, Phys. Rev. B 80, 94531 (2009)

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