

A Multiband Model for $SmFeAsO_{1-x}F_x$

S. Orozco, M. A. Ortiz, R. M. Méndez-Moreno, Gabriela Murguía

Departamento de Física, Facultad de Ciencias, Universidad Nacional Autónoma de México, Av. Universidad 3000, Ciudad Universitaria, 04510, México, D. F., México

A multi-band model within the *BCS* framework is proposed for the description of iron-based oxypnictide superconductor. *s*-wave pairing symmetry and different doping values are considered. This model is used to describe some properties of oxypnictide $SmFeAsO_{1-x}F_x$ superconductor. A non-standard electron-phonon coupling of the corresponding Fe in-plane breathing mode is considered. The Fe isotope effect is evaluated as function of the coupling parameter as well as other relevant parameters of the model.