

Magnetism and superconductivity of S-substituted FeTe

A. Ciechan,¹ M.J. Winiarski,² and M. Samsel-Czekala²

¹*Institute of Physics, Polish Academy of Sciences,
al. Lotników 32/46, 02-668 Warsaw, Poland*

²*Institute of Low Temperature and Structure Research,
Polish Academy of Sciences, ul. Okólna 2, 50-422 Wrocław, Poland*

Iron chalcogenides exhibit the complex magnetic and superconducting phase diagrams. FeTe shows an antiferromagnetic order with the $(\pi, 0)$ wave vector. Superconductivity emerges under Se or S substitution into Te sites in bulk material and also under tensile stress in FeTe thin films. In turn, hydrostatic pressure induces the antiferromagnetic to ferromagnetic phase transition. The effect of hydrostatic and non-hydrostatic pressure on magnetic and electronic structure of FeTe has been investigated by us from first principle calculations [1]. In this work, we study the influence of partial substitution with sulfur. The results indicate that superconductivity is strongly related to antiferromagnetic fluctuations with the nesting (π, π) vector.

References:

[1] A. Ciechan, M.J. Winiarski, M. Samsel-Czekala, *J. Phys.: Condens. Matter* **26**, 025702 (2014).

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