

Antiferromagnetism and superconductivity in quasi-one-dimensional organic conductors

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We examine from scaling theory the non-Fermi liquid properties of the metallic state that precedes superconductivity in the Bechgaard salts. Nuclear relaxation [1] and quasi-particle scattering rates are calculated by the renormalization group method and compared to the experimental results obtained by NMR and electrical transport [2]. The anomalous temperature and pressure behavior observed for both quantities supports the existence of a pairing mechanism for organic superconductivity that would be mediated by antiferromagnetic spin fluctuations. The results also emphasized the role played by unconventional Cooper pairing in the enhancement of spin correlations in the superconducting sector of the phase diagram of these materials.

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[1] C. Bourbonnais and A. Sedeki, arXiv:cond-mat/0904.2858.

[2] N. Doiron-Leyraud *et al.*, arXiv:cond-mat/0905.0964.