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Unconventional superconductivity nearby antiferromagnetism in quasi-1D conductors:the role of electron-phonon interaction CLAUDE BOURBONNAIS, Departement de physique, Universite de Sherbrooke, Sherbrooke, QC, Canada, J1K-2R1 and Canadian Institute for Advanced Research, Toronto, Canada, HASSAN BAKRIM, Departement de physique, Universite de Sherbrooke, Sherbrooke, QC, Canada, J1K-2R1 — The stabilization of unconventional superconductivity (SCd) close to a spin-density-wave state (SDW) under pressure in organic conductors like the Bechgaard salts points out the primary importance of the repulsive Coulomb term in the origin of these phases. However, the electron-(acoustic) phonon interaction is known to be finite in practice, as borne out for example by diffuse X-ray scattering experiments. The question then arises about the role of this coupling, if any, in the mechanism of interaction between SDW and SCd orders in such materials. In this work, we address this issue using the renormalization group method. This is done in the framework of the quasi-1D electron gas model with repulsive direct Coulomb terms and weak retarded electron-phonon interaction, which are treated on equal footing. The impact of electron-phonon interaction on the SDW and SCd instability lines of the phase diagram and on the strength of spin correlations in the normal phase are analyzed at arbitrary phonon frequency, and discussed in connection with experiments in organic superconductors like the Bechgaard salts.

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