

Dynamical charge and spin susceptibilities in a frame of t-J-G model

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Abstract

We have calculated the dynamical charge and spin susceptibilities using the new analytical expression obtained beyond a conventional random phase approximation scheme. Both susceptibilities are strongly peaked along a contour around wave vector $Q = (\pi, \pi)$. We have analyzed the dispersions of the collective excitations near $Q = (\pi, \pi)$ corresponding to a spin density wave and charge density wave modes, respectively. In addition we have calculated the momentum dependence of the imaginary part of the charge and spin susceptibilities along the instability contour and show that both susceptibilities display a maximum around the points $(\pi, \pm q_0)$, $(\pm q_0, \pi)$ in Brillouine zone with decreasing temperature that indicates that the stripe-like instability may become preferable. © 2002 Plenum Publishing Corporation.

Keywords

Charge density wave, Layered cuprates, Spin and charge susceptibility