

Unusual Charge Transport and Spin Response of Doped Bilayer Triangular Antiferromagnets

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Abstract: Within the t-J model, the charge transport and spin response of the doped bilayer triangular antiferromagnet are studied by considering the bilayer interaction. Although the bilayer interaction leads to the band splitting in the electronic structure, the qualitative behaviors of the physical properties are the same as in the single layer case. The conductivity spectrum shows the low-energy peak and unusual midinfrared band, the temperature-dependent resistivity is characterized by the nonlinearity metallic-like behavior in the higher temperature range and the deviation from the metallic-like behavior in the lower temperature range and the commensurate neutron scattering peak near the half-filling is split into six incommensurate peaks in the underdoped regime, with the incommensurability increasing with the hole concentration at lower dopings, and saturating at higher dopings.

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Key words: charge transport, spin response, t-J model

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