Abstract Submitted
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Peculiarities of spin and charge degrees of freedom in strongly correlated layered cobaltates FRANK LECHERMANN, LEWIN BOEHNKE, I. Institute for Theoretical Physics, University of Hamburg, Germany, ANTOINE GEORGES, Ecole Polytechnique, Centre de Physique Theorique (CPHT), Palaiseau, France, OLEG E. PEIL, CHRISTOPH PIEFKE, I. Institute for Theoretical Physics, University of Hamburg, Germany — The layered cobaltate systems stand for the rare case of metallic quasi-2D triangular lattices at doping x. While x=0 corresponds to a half-filled scenario, x=1 marks the band-insulating limit. Surprisingly, the phase diagram displays especially for x >0.5 a rich competition between different spin-orderings as well as intriguing charge-ordering processes. Though already at high doping, strong electronic correlations are mainly responsible for the complex physics [1-4]. By means of combinations of band-structure techniques with many-body approaches it is shown that various cobaltate features may be tackled successfully. For instance the in-plane crossover from antiferromagnetic spin correlations towards the onset of ferromagnetism as well as charge ordering tendencies favoring an effective kagome lattice close to x=0.67 in agreement with experiment. The charge order also substantially effects the spectral and transport properties, giving rise to a specific low-energy scale susceptible to nonlocal correlations.

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