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Electron-Phonon Interaction and Antiferromagnetic Correlations GIORGIO SANGIOVANNI, OLLE GUNNARSSON, Max-Planck Institut für Festkörperforschung, Stuttgart, Germany, ERIK KOCH, Institut für Festkörperforschung, Jülich, Germany, CLAUDIO CASTELLANI, MASSIMO CAPONE, Department of Physics, University of Rome "La Sapienza", Rome, Italy
— Recent experiments suggesting sizeable lattice effects in the cuprates raisethe issue of the the role of electron-phonon (e-ph) interaction in strongly correlated systems. By means of Dynamical Mean-Field Theory, we show that, in the Hubbard-Holstein model, antiferromagnetic (AF) correlations strongly enhance the effects of the e-ph coupling with respect to the paramagnetic phase,even though the net effect of the Coulomb interaction is a moderate suppression of the e-ph interaction. Doping weakens the AF correlations and reduces the effects of the e-ph, leading to a scenario in which the tendency to polaron formation is weakened by doping, in agreement with the experimental results [1].

[1] G. Sangiovanni *et al.*, Phys. Rev. Lett. **97**, 046404 (2006)

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