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Local edge modes in doped cuprates with stripes and periodic polarons E. KANESHITA, I. MARTIN, A.R. BISHOP, Los Alamos National Laboratory, Z.G. YU, SRI International, R.J. MCQUEENEY, Ames Laboratory — Several kinds of High-T_c superconductors show inhomogeneous electronic structures: stripe and checkerboard patterns. The heterogeneity in the electronic system gives rise to local pohonon modes. In this study, we calculate the phonon spectra for the system with the inhomogeneous eloctronic structures. we consider the (diagonal and vertical) stripes and periodic polarons within the mean field approximation. The former is the specific electronic structure in underdoped LSCO and the latter is one of the possibilities to explain the checkerboard structure, which is observed in optimal-doped BSCCO and lightly- doped Na-CCOC by STM. In these ground states, we calculate the phonon spectra by means of RPA. We demonstrate the existence of local phonon modes specific to these structures.

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