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【126】Anomalous Phonon Dispersion Relation in Cuprates

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Understanding of the ordering tendencies exhibited by the cuprates can give valuable insight into the origin of superconductivity in these complex oxides. Thus, I will present the study of the charge density wave (CDW) order and discuss its connection with the electron-phonon coupling in $Nd_{2-x}Ce_xCuO_4$. Recent studies suggested that the CDW order can cause an anomalous softening of the longitudinal Cu-O bond-stretching phonon mode around the order's wave vector, q_{CDW}. Motivated by these results, we performed temperature and doping-dependent inelastic X-ray scattering studies combined with the DFT calculations for the parent compound.

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