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Raman scattering study of low energy charge dynamics in the normal state of $\mathbf{Pr_{2-x}Ce_xCuO_{4-\delta}}$ G. BLUMBERG, B. S. DENNIS, Bell Labs, Lucent Technologies, M. M. QAZILBASH, R. L. GREENE, Center for Superconductivity Research, University of Maryland, College Park — Some of the normal state properties of the electron-doped (n-doped) superconducting cuprates $R_{2-x}Ce_xCuO_{4-\delta}$(R = La, Pr, Nd, Sm) are different from those of the hole-doped (p-doped) cuprates. In the n-doped cuprates at optimal doping (x = 0.15) the dc resistivity is a quadratic function of temperature whereas in the p-doped cuprates it is linear in temperature. The charge carriers in p-doped cuprates are holes whereas in the n-doped cuprates both electronlike and holelike carriers exist near optimal doping; the electronlike carriers reside near ($\pm\pi$/a, $\pm\pi$/4a) and ($\pm\pi$/4a, $\pm\pi$/a) regions and the holelike carriers reside near ($\pm\pi$/2a, $\pm\pi$/2a) regions of the Brillouin Zone. We have performed temperature and doping dependent Raman scattering study in the normal state of the n-doped superconducting cuprate $Pr_{2-x}Ce_xCuO_{4-\delta}$. Using polarized light we have isolated the low energy dynamics of the electronlike and holelike carriers. We compare Raman data in the B_{1g} and B_{2g} channels to dc resistivity and discuss the implications.

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