Dynamics of quasiparticles and antiferromagnetic correlations in electron-doped cuprate La$_{2-x}$Ce$_x$CuO$_{4+\delta}$ (LCCO) I. M. VISHIK, F. MAHMOOD, Z. ALPICHISHEV, Massachusetts Institute of Technology, J. S. HIGGINS, R. L. GREENE, University of Maryland, N. GEDIK, Massachusetts Institute of Technology — We studied quasiparticle dynamics in thin films of the electron-doped cuprate La$_{2-x}$Ce$_x$CuO$_4$ (LCCO) via optical pump-probe spectroscopy. In underdoped LCCO, the quasiparticle recombination dynamics imply a nodeless superconducting gap, which can be realized with $d_{x^2-y^2}$ symmetry if a nodal hole-pocket is absent. Meanwhile, optimally doped LCCO shows recombination dynamics consistent with line nodes. Above $T_c$, fluence-dependent dynamics indicate a fully-formed gap in the density of states, which is associated with antiferromagnetic correlations, and limits can be placed on the correlation length and time.