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Optical pump Terahertz probe transmission spectroscopy of YBCO thin films ANNA KRISTOFFERSEN, McMaster Univeristy, JOHN NAM, ROBERT HUGHES, HENRY TIEDJE, TOM TIMUSK, JOHN PRESTON, McMaster University — Our facility uses optical pump THz probe transmission spectroscopy to study the quasiparticle dynamics in Yttrium Barium Copper Oxide (YBCO) thin films. The recovery of the film exhibits two components, a fast response on the order of several ps and a long tail that lasts nanoseconds. In this presentation, the behaviour of the film in both the fast and long components of the tail will be discussed. The frequency content of the transmitted THz pulse can determine whether the observed effect is largely due to normal state quasiparticles or the superconducting condensate. We interpret the data far into the tail in terms of an elevated temperature and use this to investigate the possibility of a phonon bottleneck associated with quasiparticle relaxation.

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