

Abstract Submitted
for the MAR10 Meeting of
The American Physical Society

Terahertz-pulse-induced hot-electron transport in photoexcited GaAs FUHAI SU, Department of Physics, University of Alberta, AB, Canada, FRANCOIS BLANCHARD, GARGI SHARMA, LUCA RAZZARI, INRS-EMT, Advanced Laser Light Source, Université du Québec, QC, Canada, AYESHESHIM AYESHESHIM, TYLER COCKER, LYUBOV TITOVA, Department of Physics, University of Alberta, AB, Canada, TSUNEYUKI OZAKI, JEAN-CLAUDE KIEFFER, ROBERTO MORANDOTTI, INRS-EMT, Advanced Laser Light Source, Université du Québec, QC, Canada, MATTHEW REID, Department of Physics, University of Northern British Columbia, BC, Canada, FRANK A. HEGMANN, Department of Physics, University of Alberta, AB, Canada — We observe self-induced absorption bleaching of intense terahertz (THz) pulses in photoexcited GaAs using optical-pump/THz-probe techniques. The sample is excited using 800nm, 50fs laser pulses and probed collinearly using few-cycle THz pulses with energies up to $0.6\mu\text{J}$. The relative transmission of the THz probe pulse through the photoexcited GaAs increase at high probe fields. A simple dynamic electron transport model demonstrates that the nonlinear response arises from a decrease in electron conductivity due to intervalley electron scattering induced by the THz electric field over sub-picosecond time scales as well as an increase in the intravalley scattering rate.

Fuhai Su
Department of Physics, University of Alberta

Date submitted: 15 Dec 2009

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