

Abstract Submitted
for the MAR12 Meeting of
The American Physical Society

Thermalization of photoexcited electrons in bismuth investigated by time-resolved THz spectroscopy and *ab initio* calculations¹ IURII TIMROV, Ecole Polytechnique, LSI, TOBIAS KAMPFRATH, Fachbereich Physik, Freie Universitat, JEROME FAURE, NATHALIE VAST, Ecole Polytechnique, LSI, CHRISTIAN AST, Max-Planck-Institut fur Festkorperforschung, CHRISTIAN FRISCHKORN, Fritz-Haber-Institut der Max-Planck-Gesellschaft, MARTIN WOLF, Fachbereich Physik, Freie Universitat, PAOLA GAVA, LUCA PERFETTI, Ecole Polytechnique, LSI — The charge carrier dynamics of photoexcited bismuth generates a Drude response that evolves in time. In contrast to graphite, the plasma frequency of bismuth displays an initial increase and a subsequent decay. We have performed *ab initio* calculations of bulk bismuth within the density functional theory, and show that the non-monotonic behaviour of the plasma frequency is due to the presence of local minima in the conduction band: most of the photoexcited electrons first accumulate in these local minima, and reach the L point only 0.6 ps after photoexcitation.

¹Support from the ANR (project PNANO ACCATTONE) and from DGA are gratefully acknowledged. Computer time was granted by GENCI (project 2210).

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Date submitted: 10 Nov 2011

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