

Abstract Submitted
for the MAR17 Meeting of
The American Physical Society

Nonlinear light mixing by graphene plasmons B. VAN DUPPEN, University of Antwerp, D. KUNDYS, The University of Manchester, I. TORRE, Istituto Italiano di Tecnologia, O. P. MARSALL, F. RODRIGUEZ, The University of Manchester, M. POLINI, Istituto Italiano di Tecnologia, A. N. GRIGORENKO, The University of Manchester — Graphene is known to be a strongly optical nonlinear material. Its nonlinear response can also be enhanced by graphene plasmons. We report a new nonlinear electro-absorption effect observed in nanostructured graphene due to excitation of localized graphene plasmons. We experimentally detect and theoretically explain enhanced nonlinear mixing of near-infrared and mid-infrared light in arrays of graphene nanoribbons. Strong compression of light by graphene plasmons implies that the effect is non-local in nature and orders of magnitude larger than the conventional local graphene nonlinearity.

Ben Van Duppen
Univ of Antwerp

Date submitted: 10 Nov 2016

Electronic form version 1.4