

Abstract Submitted
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Photocurrent Response of Graphene Heterostructures JOAQUIN

RODRIGUEZ-NIEVA, MILDRED S. DRESSELHAUS, MIT — One of the obstacles to the use of graphene as an alternative to silicon electronics has been the absence of a band gap. One solution to some of the limitations that this obstacle introduces is to integrate graphene into a heterostructure such as a field-effect tunneling transistor that uses an atomically thin dielectric [1]. We explore theoretically some of the interesting properties of optically excited graphene heterostructures, where novel behaviors can appear due to the tunability of the Fermi level and thus, of the charge carrier densities and intrinsic electronic cooling mechanisms. We also discuss possible applications of such types of optically activated heterostructures in different areas of science and engineering. References: [1] L. Britnell, R. V. Gorbachev, R. Jalil, et al., *Science*, 335, 947-950 (2012)

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