

Abstract Submitted
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Excitations from Filled Landau Levels in Graphene¹ DREW IYEN-
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and Technion, LUIS BREY, Instituto de Ciencia de Materiales de Madrid (CSIC),
Madrid, Spain — We consider particle-hole excitations of graphene over an integer
quantum hall state. We first analyze the two-body problem of a single Dirac
electron and hole in a magnetic field interacting via Coulomb forces. We then turn
to the many-body problem, where particle-hole symmetry and the existence of two
valleys lead to a number of effects peculiar to graphene. The appearance of different
branches in the exciton spectrum is sensitive to the filling factor. The coupling
together of a large number of low-lying excitations leads to strong many-body
corrections, which could be observed in inelastic light scattering or optical absorption.

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