

Abstract Submitted  
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**Pseudospin Magnetism in Graphene**<sup>1</sup> HONGKI MIN, The University of Texas at Austin, GIOVANNI BORGHI, MARCO POLINI, NEST-CNR-INFM and Scuola Normale Superiore, Italy, ALLAN H. MACDONALD, The University of Texas at Austin — We predict that neutral graphene bilayers are pseudospin magnets in which the charge density-contribution from each valley and spin spontaneously shifts to one of the two layers. The band structure of this system is characterized by a momentum-space vortex which is responsible for unusual competition between band and kinetic energies leading to symmetry breaking in the vortex core. We discuss the possibility of realizing a pseudospin version of ferromagnetic metal spintronics in graphene bilayers based on hysteresis associated with this broken symmetry.

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