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Pseudospin Resonance in Semiconductor Bilayers SAEED H. ABEDINPOUR, MARCO POLINI, MARIO P. TOSI, NEST-CNR-INFM and Scuola Normale Superiore, I-56126 Pisa, Italy, BILAL TANATAR, Department of Physics, Bilkent University, Bilkent, 06800 Ankara, Turkey, ALLAN H. MACDONALD, Department of Physics, The University of Texas at Austin, Austin, Texas 78712, USA, GIOVANNI VIGNALE, Department of Physics and Astronomy, University of Missouri-Columbia, Columbia, Missouri 65211, USA — The pseudospin degree of freedom in a semiconductor bilayer gives rise to a collective mode analogous to the ferromagnetic resonance mode of a ferromagnet. We present a theory of the dependence of the energy and the damping of this mode on layer separation d. Based on these results, we discuss the possibility of realizing transport-current driven pseudospin-transfer oscillators in semiconductors.

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