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Theory of spin relaxation in bilayer graphene.[1] DENIS KOCHAN, SUSANNE IRMER, MARTIN GMITRA, JAROSLAV FABIAN, University of Regensburg — We present a new spin relaxation mechanism based on resonant scattering off local magnetic moments. We apply this mechanism to mono [1] and bilayer graphene and show that it can account for the ultrafast spin relaxation observed in spin injection experiments. In particular, the model explains the opposite dependence of the spin relaxation on the carrier density in mono and in bilayer graphene. We also show that for bilayer graphene the model explains the observed temperature induced changes in the carrier density dependence.

[1] D. Kochan, M. Gmitra, J. Fabian; Phys. Rev. Lett. 112, 116602 (2014).

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