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**Exchange coupling between localized defect states in graphene nanoflakes** MATTHIAS DROTH, GUIDO BURKARD, University of Konstanz, Germany — Graphene nanoflakes are interesting because electrons are naturally confined in these quasi zero-dimensional structures, thus eluding the need for a bandgap. Defects inside the graphene lattice lead to localized states and the spins of two such localized states may be used for spintronics. We perform a tight-binding description on the entire system and, by virtue of a Schrieffer-Wolff-transformation on the bonding and antibonding states, we extract the coupling strength between the localized states. The coupling strength allows us to estimate the exchange coupling, which governs the dynamics of singlet-triplet spintronics.

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