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Current induced spin orbit torques in antiferromagnets HUAWEI GAO, Texas A&M University, JAKUB ZELEZNY, T. JUNGWIRTH, Institute of Physics ASCR, Czech Republic, JAIRO SINOVA, Institut für Physik, Johannes Gutenberg Universität Mainz, Germany — In magnetic material with bulk inversion asymmetry or structure inversion asymmetry, unpolarized electric current can induce non equilibrium spin polarization due to spin orbit coupling. This non equilibrium spin polarization is exchange coupled with the magnetic orders and act on them as torques. These torques are called spin orbit torques(SOT) which can be used to manipulate the magnetic orders. In ferromagnets, SOT effects have been observed experimentally. We extend the study of SOT to antiferromagnetic systems. Besides similar effects as in ferromagnets, we show staggered SOT in antiferromagnets following exactly the antiferromagnetic lattice which couple with the Neel order directly. We'll report the study in both a 2D collinear antiferromagnetic model and a non-collinear antiferromagnet IrMn₃.

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