Spin Transfer torques in Antiferromagnets HAMED SAIDAOUI,
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COLLABORATION — Spin Transfer Torque (STT) has attracted tremendously
growing interest in the past two decades. Consisting on the transfer of spin angular
momentum of a spin polarized current to local magnetic moments, the STT gives
rise to a complex dynamics of the magnetization. Depending on the the structure,
the STT shows a dominated In plane component for spin valves [1], whereas both
components coexist for magnetic tunneling junctions (MTJ) [2]. For latter case
the symmetry of the structure is considered to be decisive in identifying the nature
and behavior of the torque [3]. In the present study we are interested in magnetic
structures where we substitute either one or both of the magnetic layers by anti-
ferromagnets (AF). We use Non-equilibrium Green's function formalism applied on
a tight-binding model to investigate the nature of the spin torque. We notice the
presence of two types of torque exerted on (AF), a torque which tends to rotate the
order parameter and another one that competes with the exchange interaction. We
conclude by comparison with previous works [4-5].

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