Title: *Spin caloritronics and spin dynamics in low-dimensional systems*

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Abstract:
I will present some recent results involving both atomistic and classical spin dynamics simulations (based on first-principles calculations). These methods can be used to investigate theoretically a range of spin-based phenomena, such as Gilbert damping and spin stiffness. [1,2]

Recently, we have turned some focus toward spincaloritronic phenomena, i.e. the interaction between spin and heat. For example, a thermal gradient can move domain walls via the thermal spin torque. [3]

In the presence of a thermal gradient, we find a rectification of the spin and energy flows in systems of magnetic discs at certain conditions, i.e. a spincaloritronic diode effect. Our model also predicts that energy and magnetization in certain situations may flow between two sources with the same temperature and chemical potential. This latter effect can be compared to the well-known dc Josephson effect in superconductors. [4,5]

References:

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