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Title: "Spin transport and spin-caloritronics in magnetic graphene"

Abstract: Graphene beside its very unique electronic characteristics, is believed to be a promising material for spintronics because of very slow spin relaxation in it. On the other hand, due to the strong tunability of doping in it, by employing a spin splitting, it is possible to have a so called spin chiral graphene in which electrons with different spins belong to different bands. I will discuss how such a material can show very peculiar properties in spin transport. The most intriguing result is found when spin and heat transport are combined in the so called spin-caloritronic phenomena. We show that the undoped magnetic graphene, can host a pure spin current driven by the temperature gradient. In addition it is revealed that the profound thermoelectric effects can be achieved at easily accessible intermediate temperatures when the thermal energy is comparable with Fermi energy. By further investigation of spin-dependent Seebeck effect a significantly large figure of merit for spin thermopower is found which suggests that magnetic graphene is very promising for spin-caloritronics applications, as well.