Fokker-Planck approach to the theory of the magnon-driven spin Seebeck effect

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Following the theoretical approach by J. Xiao *et al.* [Phys. Rev. B **81**, 214418 (2010)] to the spin Seebeck effect, we calculate the mean value of the total spin current flowing through a normal metal/ferromagnet interface. The spin current emitted from the ferromagnet to the normal metal is evaluated in the framework of the Fokker-Planck approach for the stochastic Landau-Lifshitz-Gilbert equation. We show that the total spin current depends not only on the temperature difference between the electron and the magnon baths, but also on the external magnetic field and magnetic anisotropy. Apart from this, the spin current is shown to saturate with increasing magnon temperature, and the saturation temperature increases with increasing magnetic field and/or magnetic anisotropy.

References:
1. L. Chotorlishvili, Z. Toklikishvili, V. K. Dugaev,J. Barna´s,S. Trimper, and J. Berakdar PHYSICAL REVIEW B **88**, 144429 (2013)