

Spintronics and Magnon Bose-Einstein Condensation

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Spintronics is the science and technology of electric control over spin currents in solid-state-based devices [1]. Recent advances have demonstrated a coupling between electronic spin currents in non-magnetic metals and magnons in magnetic insulators (see figure). The coupling is due to so-called spin transfer and spin pumping at interfaces between the normal metals and magnetic insulators. In these lectures, we aim at giving a pedagogical introduction to these concepts and developments. We will also discuss the prospects they raise for electric control of quasi-equilibrium magnon Bose-Einstein condensates and spin superfluidity.

[1] R.A. Duine, A. Brataas, S.A. Bender, and Y. Tserkovnyak, [arXiv:1505.01329](https://arxiv.org/abs/1505.01329)

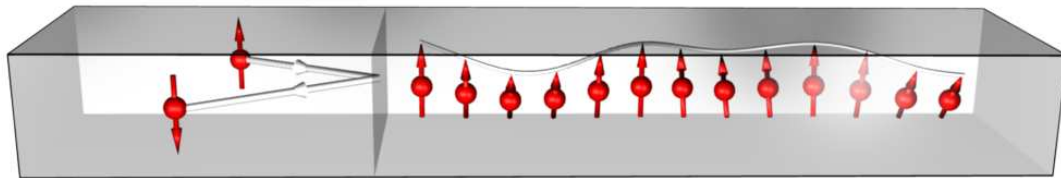


Figure 1: Schematic coupling between electronic spin currents in non-magnetic metals and magnons in magnetic insulators.