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Title: Spin-caloritronics with magnetic insulators

Abstract:

Spintronics based on magnetic and non-magnetic elemental metals generated functionalities that are employed in nanoscale devices such as switches, memories, and sensors. Ferrimagnetic electric insulators such as man-made yttrium iron garnets form another class of versatile materials with high magnetic quality. K. Uchida, E. Saitoh c.s., demonstrated that they can be actuated thermally and electrically and thereby integrated into conventional electronics and thermoelectric devices, raising the hope for a new and green spintronics. After an elementary introduction into the basic physical concepts, I will review a number of recent theoretical insights and experimental evidence on magnetic insulators and its bilayers with non-magnetic metals.