

Van der Waals interaction between anisotropic topological insulator slabs

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Van der Waals (vdW) interactions are prevalent in Nature and account for diverse natural phenomena, such as the flocculation of colloids and the adhesion of geckos to walls. Between similar dielectric materials such interactions are typically attractive and give rise to the problem of stiction and non-contact friction in micro and nano electro-mechanical systems, thus it is of importance to find possibilities of overcoming such stiction and friction. In the seminar we consider the vdW interaction between topological insulators, which are materials that exhibit “axion electrodynamics”, for which an electric field can give rise to magnetic polarization and a magnetic field can also give rise to electric polarization. For the case of dielectrically anisotropic topological insulators, we examine how such electrodynamics can give rise to the possibility of repulsive vdW forces and a reduction of frictional torque.

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