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**Fluctuation-Induced Interactions in external magnetic fields: Casimir force and Radiative Heat Transfer** RAUL ESQUIVEL-SIRVENT, Univ Nacl Autonoma de Mexico — Thermally induced electromagnetic fields give rise to the Casimir force and the near field heat transfer between two bodies separated by a gap. These phenomena are described by Rytovs theory of fluctuating electromagnetic fields and both the Casimir force and the near field heat transfer depend on the local dielectric function of the bodies. In this work we present a theoretical calculation on the modulation of fluctuation-induced interactions in the presence of an external magnetic field. The system consists of two parallel plates separated by a gap $d$. Each plate is isotropic and has a local dielectric function. Applying an external magnetic field parallel to the plates, in the so called Voigt configuration, the plates become anisotropic. In particular, we consider plates of InSb. For the Casimir force the two plates are kept at the same temperature and the external field reduces the magnitude of the force. Similarly if the two plates are kept at different temperature the near field radiative heat transfer is modulated by the magnitude of the external magnetic field. The results are extended to semiconducting quantum wells. In both cases, the excitation of magnetoplasmons provides an explanation for the observed effect.

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