

Optical properties of a spherical 2D electron gas in a uniform magnetic field

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Using the RPA, we calculate the plasmon frequencies of an electron gas on a two-dimensional spherical surface in the presence of a weak magnetic field. We show that the magnetic field results in a coupling between electronic states with different angular momentum numbers. This coupling results in a blueshift of the dipolar plasmon resonance with increasing magnetic field. We also investigate how the plasmon energies vary as a function of the number of electrons and radius of the sphere.