WEAK FIELD RESPONSE OF QUANTUM GASES

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This talk is a presentation of results of an ongoing study on the diamagnetic behavior of a quantum gas of non-interacting charged particles subjected to an external uniform magnetic field together with a non local random electric potential. We give a new formulation of the thermodynamic limit of magnetization and orbital magnetic susceptibility in the weak field regime. These results cover a wide class of physically relevant electric potentials which model amorphous solids and even crystalline solids. In the case of periodic interactions we derive the so called Landau-Peierls formula at zero temperature and for small density.