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The Variational Calculation for Small Cylindrical Metallic Cluster CHIN-SHENG WU, Yuan Ze University — We use the Hohenberg-Kohn principle to calculate the density of the surface electronic charge around small cylindrical metallic cluster. The surface potential is varied in order to get the minimum total energy, which is the summation of electro-static energy and exchange-correlation energy. We use the local approximation for the inhomogeneous dielectric function around the surface. Therefore this surface charge can be applied to find dielectric constant, which is a function of the electron density. The dielectric constants are calculated on the cylindrical surface for various metal densities.

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