

Electron Gas with Coulomb Interaction

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It is said that for a simple demonstration of what happens in a metal, we can only work with the jellium model, ignoring the details of the lattice, which means we can just work with a non-relativistic electron gas with Coulomb interaction. This article is an extension of Section 6.2 in [this solid state physics note](#). We will discuss some early development of RPA.

Zhengzhong
Li, Sec. 4.2

- 1 Notations and basic facts about the jellium model**
- 2 Classical (or first quantized) theory of the collective oscillation of electrons**
- 3 The electric susceptibility and bosonic modes**