Homework #7
Computational Microelectronics

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1 Results

We have calculated the electron density and integrated electron density by solving the Schrödinger equation of 3D infinite potential well. Note that, by setting $L_x = L_y = 100$ nm and $L_z = 0.5$ nm, we approximately the quantum number about z-direction n_z as a subband number. We find that the integrated electron density increases with the Fermi energy E_F. And the electron density also increases and become more flat near the midpoint in the z-direction.

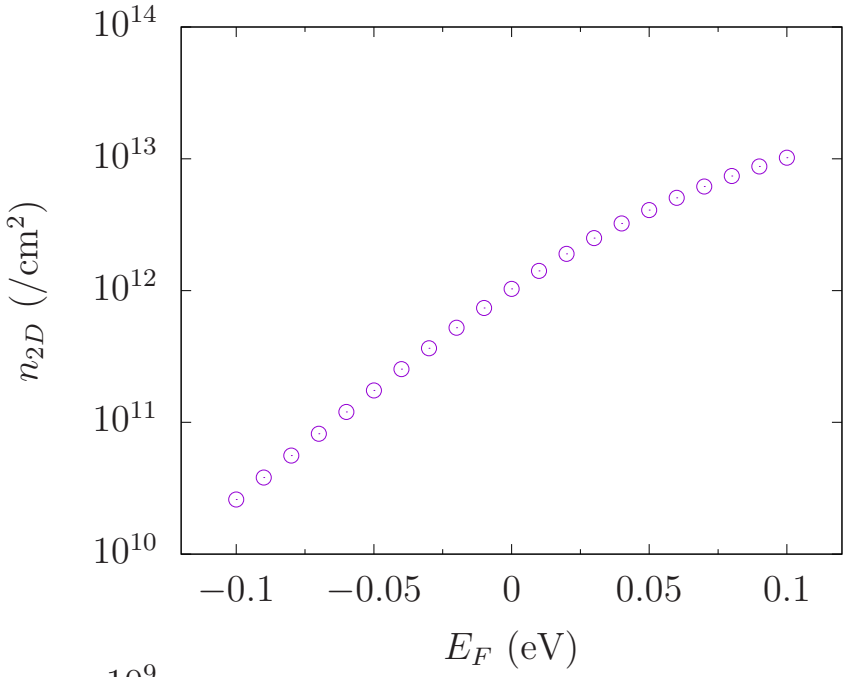

Figure 1: The integrated electron density n_{2D} as a function of the Fermi energy E_F.

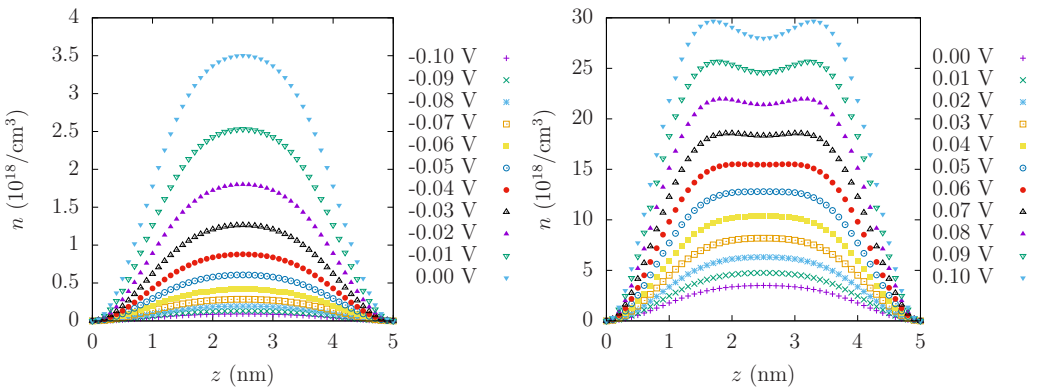

Figure 2: Snapshot of the electron density n_{3D} in the z-direction.