

ECE 656: Fall 2009
Lecture 24 Homework

- 1) In Lecture 24, we derived a general expression for the electron-phonon scattering rate as:

$$\frac{1}{\tau} = \frac{1}{4\pi^2} \int_{\beta_{\min}}^{\beta_{\max}} C_{\beta} \left(N_{\omega} + \frac{1}{2} \mp \frac{1}{2} \right) \beta^2 d\beta$$

Repeat the derivation and derive the corresponding expression for two dimensional electrons. You may assume parabolic energy bands and that C_{β} for 2D electrons is given.