ECE 656: Fall 2009
Lecture 27 Homework

1) Provide the missing step and show that

$$\frac{1}{\tau_m(E)} = \sum_{p'_{\|}} (1-\cos\theta) S\left(p_{\|}, p'_{\|}\right) = \frac{D_A^2 k_B T}{4\hbar^3 \rho_m \left(\upsilon_F \upsilon_S\right)^2} E$$

for $E > 0$.

2) Assume $n_S = 1.0 \times 10^{12}$ cm^{-2} and compute the room temperature, ADP scattering-limited mobility for electrons in graphene. Also compute the average mean-free-path for backscattering. You will need to hunt down the appropriate materials parameters.