Assignment Five (part A), Due Friday, May 26, 5:00 pm.

[1.] Compute the scattering cross section from a small dielectric sphere (radius $a \ll \lambda$).

[2.] Compute the scattering cross section from a small, highly conducting sphere. Here you need to consider the fields due to both the induced electric and magnetic dipoles.

[3.] A Lorentz transformation from Frame S to Frame $S'$ is described by the rapidity parameter $\theta$ where $\cosh \theta = \gamma = 1/\sqrt{1 - \beta^2}$ and $\beta = v/c$. A second, parallel, Lorentz transformation from Frame $S'$ to Frame $S''$ is done along the same axis and is described by rapidity parameter $\theta'$. How is the rapidity parameter $\theta''$ for the Lorentz transformation from Frame S to Frame $S''$ related to $\theta$ and $\theta'$?