

ASTR 792
T/R 9:30 - 10:45 AM
Due November 21

Week #14

Draine 24.3

Suppose that interstellar dust grains have $Q_{abs} \propto \lambda^{-2}$ for $\lambda > 1 \mu\text{m}$. When exposed to the local interstellar radiation field (LISRF), these grains are heated to $T \approx 18 \text{ K}$ and radiate with λI_λ peaking at $\lambda = 140 \mu\text{m}$. In a region where the starlight has the same spectrum as the LISRF but is stronger by a numerical factor U :

- (a) What will be the grain temperature?
- (b) If $U = 10^3$, what will be the wavelength where λI_λ peaks?