Summary of lecture 20

• A gas of photons in thermal equilibrium has

 $\mu = 0$

• The energy density of a photon gas is

$$\frac{U}{V} = \left(\frac{\pi^2 k^4}{15(\hbar c)^3}\right) T^4$$

• And the power radiated by a black body per unit area is

$$W = \sigma T^4$$
 (Stefan's Law)
 $\sigma = \frac{c}{4} \frac{\pi^2 k^4}{15(\hbar c)^3} = 5.67 \times 10^{-8} \text{ WK}^{-4} \text{m}^{-2}$