Solar Radiation Spectrum

Black body spectrum at T=5800 K (from AJ ch. 6). The total intensity is normalised to that of the AM1.5 solar spectrum of 1 kWm⁻².

Wein’s Displacement Law

The wavelength distribution of thermal radiation from a black body at any temperature has essentially the same shape as the distribution at any other temperature, except that each wavelength is displaced on the graph.
**Rayleigh-Jeans Law**

Spectral radiance of electromagnetic radiation at all wavelengths from a black body at a given temperature through *classical* arguments:

\[
u_\nu = \frac{2v^2 k_B T}{c^2} \]

\[
u_\lambda = \frac{2ck_B T}{\lambda^4} \]

Comparison of Rayleigh–Jeans law with Wien approximation and Planck's law, for a body of 8 mK temperature. *Ultraviolet catastrophe* when classical and quantum descriptions diverge. (From Rayleigh-Jeans law Wiki page)
Exercise: A source of light of wavelength of 560 nm of intensity 800 W m$^{-2}$ is incident on a solar cell. What is the incident flux of photons?