We saw previously that the spectral intensity can be expressed with respect to wavelength:

$$S_\lambda(\lambda) = \frac{2\pi hc^2}{\lambda^5}\frac{1}{e^{\frac{hc}{\lambda k_B T}} - 1} \tag{1}$$

I mentioned that the peak intensity shifts to lower wavelengths at higher temperature. We can solve for the peak in the spectral intensity by taking a derivative. The resultin equation can

but the result is a non-linear equation that is a bit of a pain. So it's convenient to just have an equation. The result is known as **Wien's displacement law**, and states that

$$\lambda_{\text{peak}} = \frac{b}{T} \tag{2}$$

where $b = 2.9 \times 10^{-3}$ m K is called Wien's displacement constant.