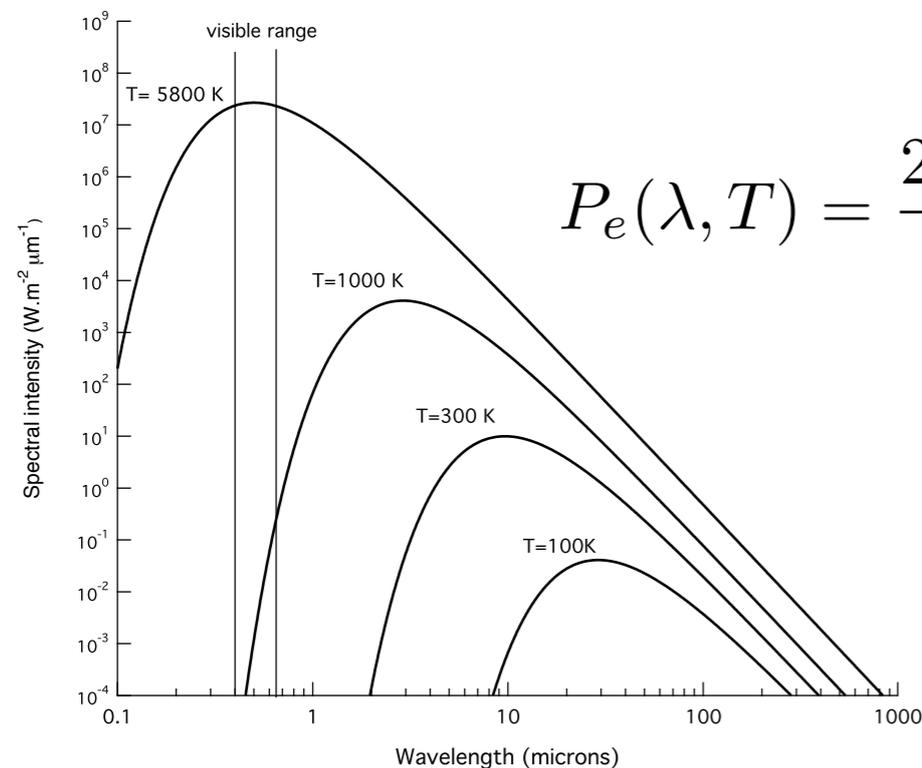


Radiative heat transfer

Black body radiation



$$P_e(\lambda, T) = \frac{2\pi hc^2}{\lambda^5} \frac{1}{\exp(hc/\lambda k_B T) - 1}$$

$$\lambda_M(\text{m}) = \frac{2.88 \times 10^{-3}}{T}$$

$$P_{BB}(T) = \int_0^{\infty} P_e(\lambda, T) d\lambda = \frac{2\pi^5 k_B^4}{15 h^3 c^2} T^4 = \sigma T^4$$

Non black bodies

Emissivity ε = absorptivity α

$$P(\lambda, T) = P_e(\lambda, T) \varepsilon(\lambda)$$

Grey bodies

$$\varepsilon(\lambda) = C$$

The Donald Trump problem at zeroth order :
show that with a completely transparent atmosphere, it would be difficult to grow lawn for a golf course on Earth.

Diameter of the Sun: $1,4 \cdot 10^6$ km
Surface temperature of the Sun : 5800 K
Distance to the Sun: $1,5 \cdot 10^8$ km
Diameter of the Earth: 12700 km

Effective albedo of the Earth: 0.31

Earth and Sun are assumed to be black bodies

