L3BBFS

1. Black body Radiation. Graph of f(ν) = dL/dν, ν is frequency
2. Integration over the wavelength range from 10^14 to 10^13 1/s to obtain the Radiance.
3. Multiplication with area times solid angle to obtain the Radiant energy.

1. Black body Radiation. Graph of dL/dν and ν is frequency

Constants for frequency dependence

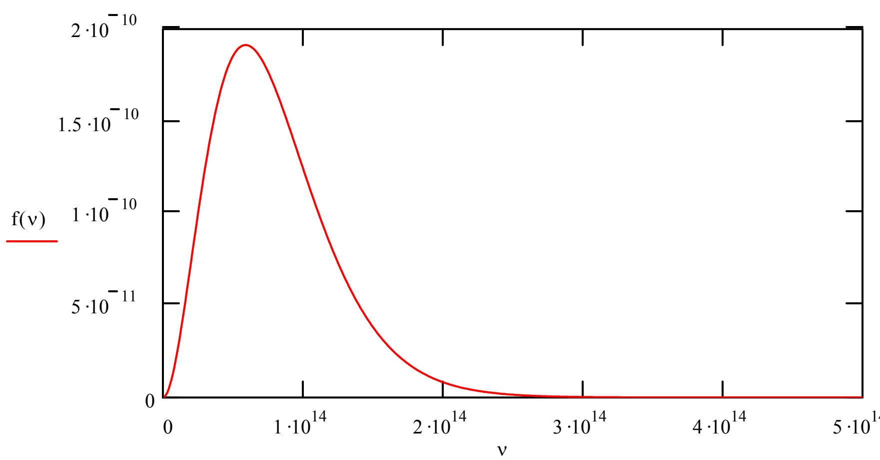
$T := 1000$

$c4 := 4.78\cdot10^{-11}$ $\quad$ $c3 := 1.47\cdot10^{-50}$

$\nu := 5\cdot10^{14}, 4.99\cdot10^{14} .. 10^{12}$

Planck's Law depending on frequency

$$f(\nu) := \frac{c3}{\left[e^{\left(\frac{c4\cdot\nu}{T}\right)} - 1\right]}\cdot\nu^3$$



2. Integration over the frequency range from 10^14 to 10^13 to obtain the Radiance.

Radiant Energy

$$R := \int_{10^{13}}^{10^{14}} f(\nu)\, d\nu$$

Radiance $\quad R = 1.316 \times 10^4$ Watts

3. Multiplication with area times solid angle to obtain the Radiant energy.

Area A, Solid angle SA $A := .1$ $SA := 4$

Radiant energy RR

$RR := A \cdot SA \cdot R$ $RR = 5.265 \times 10^{3}$

RR has the same value as the corresponding value when integrating over wavelength.