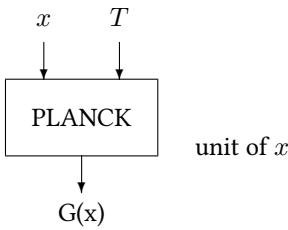


Block PLANCK

The PLANCK block simulates Planck’s radiation law.



Name	PLANCK
Function	em0001
Inputs	2
Outputs	3
Parameters	0 . . . [1]
Strings	0
Group	S

Inputs

- 1 Wavelength $\lambda/\mu\text{m}$ or photon energy / eV, depending on BP(1)
- 2 Blackbody temperature T/K

Outputs

- 1 Blackbody radiation after Planck If $s = 0$ $G(x)/\text{W m}^{-2} \mu\text{m}^{-1}$, if $s = 1$ $G(x)/\text{W m}^{-2} \text{eV}^{-1}$
- 2 Blackbody radiation after Wien
- 3 Blackbody radiation after Rayleigh-Jeans

Parameters

- 1 Unit switch s . If $s = 0$ (default) input one is interpreted as wavelength in μm , if $s = 1$ input one is interpreted as energy in eV.

Strings

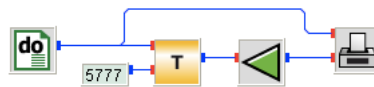
None

Description The radiation law known as Planck's law is given by

$$G(\lambda) = 2\pi hc^2 \frac{1}{(\lambda^5 \exp(\frac{hc}{\lambda kT}) - 1)}$$

where λ denotes the wavelength, h is the Planck constant $6.6260755 \cdot 10^{-34}$ J s, c is the speed of light in vacuum $299\,792\,458$ m s $^{-1}$, k is the Boltzmann constant $1.380658 \cdot 10^{-23}$ J K $^{-1}$ and T the temperature of the body in kelvin.

planck.vseit



A **DO** block generates wavelength values from 0 to 4 μm in steps of 0.01 μm . A **CONST** block provides the black body temperature of the Sun. The **PLANCK** block calculates the spectral distribution, which is attenuated by the dilution factor 46200.

The **PLOT** block displays the solar spectrum outside atmosphere.

