

1. Read the lab manual
2. Create a function that calculates the intensity of the blackbody spectrum radiation for a given temperature T given vector of wavelength $\{\lambda_i\}$ according to Equation (2) of the lab manual.
3. There are six filters we will use in this experiment. Three internal camera filters:

Camera filter	File of filter transmission
Red	Basler_red.txt
Green	Basler_green.txt
Blue	Basler_blue.txt

and three external filters:

External filter	File of filter transmission
Red	FB650-40.txt
Green	FB550-40.txt
Blue	FB450-40.txt

You can find all transmission files in the corresponding module on Canvas.

The first column of the file is the wavelength in nm, and the second column is the transmissions at those wavelengths.

Import any transmission file and use its wavelength column to calculate blackbody spectrum using for $T = 3000\text{ K}$. Do not forget that the wavelength in the file is given in nm. Plot spectrum.

4. Plot the spectrum as it is seen by the camera through internal and external red filters applying the corresponding transmissions:

$$I_{red} = Tr(\lambda)I(\lambda, T)$$

where

$$Tr(\lambda) = Tr_{camera}(\lambda) \cdot Tr_{filter}(\lambda)$$

Plot resulting spectrum.

5. Repeat 4) for green and red filters.