Blackbody Radiation - Pre-lab exercise

You can use the lab report template to prepare the submission of the pre-lab exercises. Feel free to use calculations or graphs in your final report, but you don't need to include prelab with the report.

1. Theoretical graph

Making a reasonable assumption of the maximum temperature of the incandescent light bulb, plot the graph of its radiated intensity S vs T^4, using Eq.(1) in the manual.

Choosing one value of temperature, plot the inverse-square law dependence of expected intensity vs distance to the blackbody. Think about what part of the graph should have more experimental points to accurately predict the correct shape of the curve.

Reminder: in all theoretical formulas the temperature is measured in Kelvins.

2. Error propagation

Find the expressions for the experimental uncertainties for S and T in Eq.(5), from the instrumental uncertainties of the voltage and current meters ΔV and ΔI.

Find the connection between the uncertainty of x and $1/x^2$.