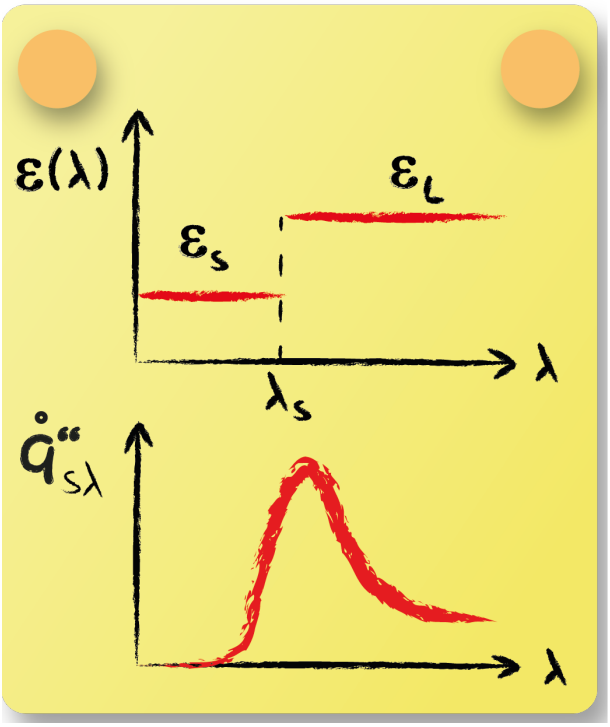
Surface Brightness: Task 31



The emissivity of a body is dependend on wavelength. The diagram shows the emissivity for a certain body, which is given by ϵ_S for wavelength shorter and ϵ_L for wavelength longer than λ_S.

1 $\bar{\epsilon} = \epsilon_\mathrm{S} F_{0\to\lambda_\mathrm{S}} + \epsilon_\mathrm{L}(1 - F_{0\to\lambda_\mathrm{S}})$

2 The averaged emissivity is obtained by $\bar{\epsilon} = \frac{\int_0^\infty \dot{q}''_{\lambda\epsilon} d\lambda}{\int_0^\infty \dot{q}''_{\lambda\mathrm{b}} d\lambda}$. Since ϵ is constant in certain intervals, the integral can be expressed by the Function $F_{0\to\lambda}$, which gives the fraction of black body radiation up to wavelength λ.