Surface Brightness 06
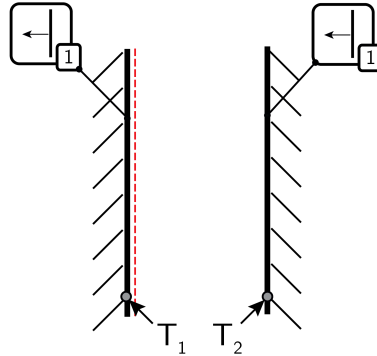
Determine the surface brightness $\dot{Q}_1$.

Definition of the surface brightness:

$$\dot{Q}_1 = \dot{Q}_{1,\epsilon} + \cancel{\dot{Q}_{1,\rho}}^{0} + \cancel{\dot{Q}_{1,\tau}}^{0}$$

Defining the emitted, reflected and transmitted radiation:

The emitted radiation of a black body radiator can be stated as:

$$\dot{Q}_{1,\epsilon} = \cancel{\epsilon_1}^{1}\sigma A_1 T_1^4$$

Inserting and rewriting:

$$\Rightarrow \dot{Q}_1 = \sigma A_1 T_1^4$$