Surface Brightness 02
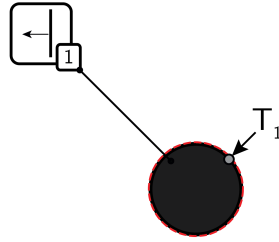
Determine the surface brightness $\dot{Q}_1$.

Definition of the surface brightness:

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

Defining the emitted, reflected and transmitted radiation:

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

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

Inserting and rewriting:

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