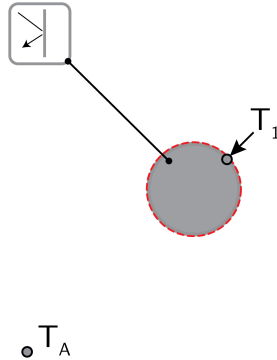


# Surface Brightness 03

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



**Definition of the surface brightness:**

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

**Defining the emitted, reflected and transmitted radiation:**

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

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

The transmitted radiation can be expressed by the reflection coefficient and the radiation being transferred toward the body:

$$\dot{Q}_{1,\rho} = \rho_1 \dot{Q}_A = \rho_1 \sigma A_1 T_A^4$$

**Inserting and rewriting:**

$$\Rightarrow \dot{Q}_1 = (\epsilon_1 T_1^4 + \rho_1 T_A^4) \sigma A_1$$