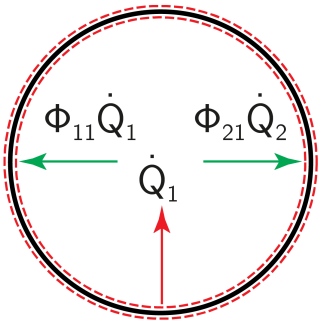
EB - Rad. - Outer 03

Write the outer energy balance for object 1 being in thermal equilibrium. Use view factors and surface brightness whenever possible.



Energy balance:

$$\frac{\partial U}{\partial t}^{0} = \sum \dot{Q}_{\text{in}} - \sum \dot{Q}_{\text{out}}$$

$$0 = \Phi_{11}\dot{Q}_1 + \Phi_{21}^{1}\dot{Q}_2 - \dot{Q}_1$$

Heat fluxes:

The surface brightnesses of bodies 1 and 2 will be determined in a separate task and can be stated as $\dot{Q}_1$ and $\dot{Q}_2$ respectively.

Substituting and rewriting:

$$0 = \Phi_{11}\dot{Q}_1 + \dot{Q}_2 - \dot{Q}_1$$