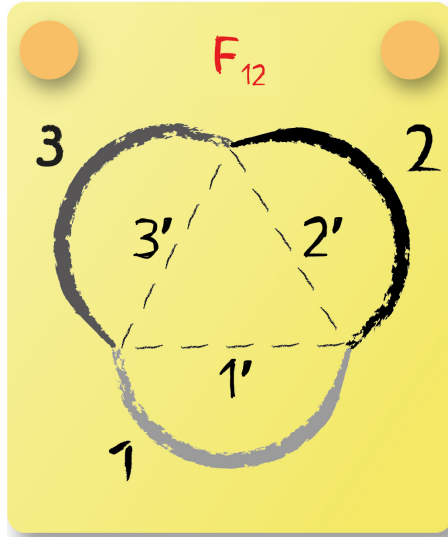# Lecture 05 - View Factor 15

Determine view factor F_{12}.

From symmetry it can be seen:

$$F_{1'2'} = \frac{1}{2}$$

And

$$F_{2'2} = 1$$

Areas:

$$A_1 = \pi r \cdot L$$
$$A_{1'} = 2r \cdot L$$

Reciprocity rule:

$$F_{1'1} A_{1'} = F_{11'} A_1$$
$$F_{11'} = \frac{A_{1'}}{A_1} = \frac{2rL}{\pi rL} = \frac{2}{\pi}$$

Therefore:

$$F_{12} = F_{11'} \cdot F_{1'2'} \cdot F_{2'2} = 1/\pi$$

In other words: A fraction $\frac{2}{\pi}$ of the radiation from body 1 is emitted towards the auxiliary plane 1'. From auxillary plane 1', a fraction of $\frac{1}{2}$ is emitted towards auxiliary plane 2' ($=\frac{1}{\pi}$ fraction of the radiation of body 1). From auxiliary plane 2', a fraction of 1 is emitted towards body 2 ($=\frac{1}{\pi}$ fraction of the radiation of body 1)