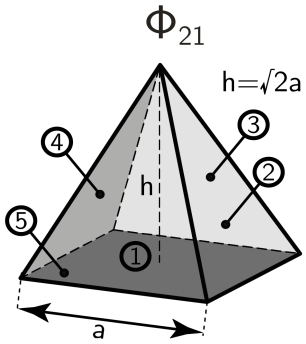
View Factor 58

Determine the view factor Φ_{21}:



A flat plate can never see itself and therefore:

$$\Phi_{11} = 0$$

From symmetry one sees that $\Phi_{12} = \Phi_{13} = \Phi_{14} = \Phi_{15} =$.

Combining this property with the summation rule ($\Phi_{11} + \Phi_{12} + \Phi_{13} + \Phi_{14} + \Phi_{15} = 1$) one finds:

$$\Phi_{12} = \frac{1}{4}$$

Using the reciprocity rule ($\Phi_{21} A_2 = \Phi_{12} A_1$) one finds:

$$\Phi_{21} = \Phi_{12} \frac{A_1}{A_2} = \frac{1}{4} \cdot \frac{a \cdot a}{\frac{1}{2} \cdot \left(a \cdot \sqrt{h^2 + \left(\frac{a}{2}\right)^2} \right)} = \frac{1}{3}$$