ABSTRACT: Let \( n_1 \) and \( n_2 \) be the indexes of refraction of two homogeneous and isotropic media I and II, respectively. Suppose that from a point \( O \) inside medium I light emanates with intensity \( f(x) \) for \( x \in \Omega \). We seek a refracting surface \( \mathcal{R} \) parameterized by \( \mathcal{R} = \{ f(x) : x \in \Omega \} \), separating media I and II, and such that all rays refracted by \( \mathcal{R} \) into medium II have directions in \( \Omega^* \) and the prescribed illumination intensity received in the direction \( m \in \Omega^* \) is \( f^*(m) \). We prove that the surface \( \mathcal{R} \) exists and is unique up to dilations. This is joint work with Qingbo Huang.

Refreshments served at 3:30 p.m.
in the Math Dept. COMMON ROOM, Thackeray 705