COLLOQUIUM
UNIVERSITY OF PITTSBURGH
FRIDAY, APRIL 18, 2008

704 THACKERAY HALL

4:00 P.M.

PROFESSOR CRISTIAN GUTIERREZ

DEPARTMENT OF MATHEMATICS

TEMPLE UNIVERSITY

THE REFRACTOR PROBLEM IN

RESHAPING LIGHT BEAMS

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 Ω^* 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