1153-78-277 **Cristian Gutierrez**, **Qingbo Huang** and **Henok Mawi*** (henok.mawi@howard.edu). *The Far Field Refractor Problem in Anisotropic Media.*

The far field refractor problem in geometric optics is an inverse problem which deals with constructing a refracting surface that is capable of reshaping a light beam from a source with a given illumination intensity so that that the intensity will be redistributed into a set of directions in a prescribed way. While there are several results discussing this problem, many of them consider homogeneous and isotropic media in their model. Here we pose the problem in anisotropic media, formulate a law of refraction using Fermat's principle of least time and exhibit the existence of a weak solution for the problem. (Received August 29, 2019)