

1145-35-1458 **Henok Mawi*** (henok.mawi@howard.edu), Department of Mathematics, 2441 Sixth street NW, Washington, DC 20059. *On Mathematical Problems in Geometric Optics.*

Mathematical problems in geometric optics which deal with determining a surface that is capable of reshaping a light beam from a source with a given illumination intensity into a prescribed intensity distribution on a target, have in recent years received a lot of attention. Interest to investigate several theoretical and numerical aspects of these inverse problems has risen mainly because the techniques used in their analysis interweave ideas from the mathematics of mass transportation theory, calculus of variations and nonlinear partial differential equations of Monge-Ampère type. In this talk we will discuss an overview of these problems and describe an iterative method for approximating a solution to one such problem called the refractor problem. This is a joint work with Roberto De Leo and Cristian Gutiérrez. (Received September 22, 2018)