1139-35-484   **Cristian E Gutierrez*** (`gutierre@temple.edu`), Department of Mathematics, Temple University, Philadelphia, PA 19122, and **Ahmad Sabra**, Faculty of Mathematics, Informatics, and Mech, University of Warsaw. *On the existence of dichromatic single element lenses.*

Due to dispersion, light with different wavelengths, or colors, is refracted at different angles. So when white light is refracted by a lens, in general, each color comes to a focus at a different distance from the objective. Using fixed point theorems and solving a system of functional differential equations, we determine when is mathematically possible to design a lens made of a single homogeneous material so that it refracts light superposition of two colors into a desired fixed final direction. Two problems are solved: one is when light emanates in a parallel beam and the other is when light emanates from a point source. `https://arxiv.org/abs/1801.07223` (Received February 19, 2018)