1020-35-102   **Robert P Lipton*** (`lipton@math.lsu.edu`), Department of Mathematics, 384 Lockett Hall, Louisiana State University, Baton Rouge, LA 70803. *Configurations of nonlinear materials with electric fields that minimize L^p norms.*

A rigorous methodology is given for the construction of configurations of multi-phase nonlinear dielectric materials with electric fields that have the smallest L^p norm among all configurations subject to a resource constraint. To illustrate the ideas examples are provided that exhibit configurations of dielectric materials with electric fields minimizing the L^2 norm and L^4 norm, respectively. (Received August 20, 2006)