1077-35-2135   **Andrej Cherkaev*** (`cherk@math.utah.edu`), 155 S 1400 E, JWB 225, Salt Lake City, UT 84112.
*Bounds and optimal structures of three-material composites: Beyond the translation
bound.* Preliminary report.

We consider a composite assembled from three isotropic materials with fixed volume fractions. A lower bound for the effective conductivity is found using a generalization of the Translation method that accounts for inequalities on the range of fields in the materials in an optimal structure. We show that special finite-rank laminates realize the bound in all but one parameter domains. For isotropic structures, we also find new type of optimal structures, wheels assembly. (Received September 21, 2011)