

1067-35-2125

Ellen Shiting Bao* (shbao@math.umn.edu), 206 Church St SE, Minneapolis, MN 55455, and
Haigang Li, Yanyan Li and Biao Yin. *Gradient estimates for elliptic equation and system from composite media.*

We establish both upper and lower bounds of the gradient estimates for solutions to the perfect conductivity problem in the case where perfect (stiff) conductors are closely spaced inside an open bounded domain. These results give the optimal blow-up rates of the stress for conductors with arbitrary shape and in all dimensions. We also obtain an upper bound of the gradient estimates to the insulated case. As for system we recently derive local gradient estimates when the solution takes constant values on the inclusions. (Received September 22, 2010)