

1053-42-158

Caroline Sweezy* (csweezy@math.nmsu.edu), Department of Mathematical Sciences, New Mexico State University, P. O. Box 30001, 3MB, Las Cruces, NM 88003-8001. *Two weight conditions for norm bounds on solutions to Poisson's equation in a bounded nonsmooth domain in Euclidean space.* Preliminary report.

One way to understand the rate of change of a temperature function on a bounded domain is to consider how the gradient of the temperature behaves with respect to different measures. Methods originally used by Wheeden and Wilson to investigate solutions to the Dirichlet problem can be adapted to for solutions to the nonhomogeneous equation, $Lu = \text{div}(f)$ in D , $u(x) = 0$ on $\text{boundary}(D)$, to obtain sufficient conditions on Borel measures m and ν so that the L^q norm of a local Hölder norm of $u(x)$ with respect to the measure m on D is dominated by the L^p norm of $\text{div}(f)$ and of f with respect to ν on the same domain, for $3 \leq n < p \leq q < \infty$. A local Hölder norm of u is been used instead of the gradient of u . Results for both the steady state and the time dependent equations will be discussed. (Received September 01, 2009)