1037-35-207 **Martin Dindos*** (m.dindos@ed.ac.uk), The University of Edinburgh, School of Mathematics, Mayfield Rd, JCMB KB 6212, Edinburgh, EH9 3JZ, Scotland, and **Jill Pipher** and **Stefanie Petermichl**. *L^p Dirichlet problem for elliptic operators with rough coefficients.*

We present of joint work with J. Pipher and S. Petermichl where we study the Dirichlet L^p solvability of divergence type elliptic operators with (just) L^∞ coefficients. Well know counterexamples show that boundedness and ellipticity is not sufficient for L^p solvability, hence additional condition is required. Usually, some kind of continuity or Dini-type condition is assumed. We instead present a much weaker Carleson type condition that is in some sense "sharp". In particular, we present result that for any $p > 1$ if certain Carleson norm of coefficients of the operator is less than $C(p)$ then the L^p problem is solvable. In addition, if coefficients satisfy vanishing Carleson condition, then the problem is solvable for all $p > 1$. This can be used to show that the L^p Dirichlet problem for the Laplace operator is solvable for all $p > 1$ on Lipschitz domains with the property that $\nabla\phi$ is in the "vmo", where ϕ is the Lipschitz function that (locally) determines the boundary. "vmo" is the space of functions of vanishing mean oscillations. (Received February 02, 2008)