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**Nguyen T Nguyen\*** (nnguyen@math.uchicago.edu). *The Dirichlet and regularity problems for second order elliptic operators with bounded, real, but not necessarily symmetric, coefficients.* Preliminary report.

In this paper, we consider the  $L^2$  boundary value problems for the divergence form second order elliptic equation  $\mathcal{L}u = -\operatorname{div}(A\nabla u) = 0$  in  $\Omega \subset \mathbb{R}_+^d$ , a bounded Lipschitz domain, where the matrix  $A$  is assumed to be real but not necessarily symmetric. Assume that  $A$  is closed, in a Carleson measure sense, to an elliptic matrix that is continuous on the boundary  $\partial\Omega$ . In this setting, we show that the Dirichlet and regularity problems are solvable. We also provide similar positive answer in the system setting provided that the coefficients  $A = (a_{ij}^{rs})$  satisfies the extra “symmetry” condition:  $a_{ij}^{rs} + a_{ji}^{rs} = a_{ij}^{sr} + a_{ji}^{sr}$  and the Dirichlet problem is defined to include the square function estimate. (Received August 12, 2013)