1077-65-1482   **Holst Michael** (`mholst@math.ucsd.edu`), 9500 Gilman Dr., Dept. #0112, La Jolla, CA 92093, **Ryan Szypowski** (`rszypows@math.ucsd.edu`), 9500 Gilman Dr., Dept. #0112, La Jolla, CA 92093, and **Yunrong Zhu*** (`zhu@math.ucsd.edu`), 9500 Gilman Dr., Dept. #0112, La Jolla, CA 92093. *A Two-grid Method for Semilinear Interface Problems.* Preliminary report.

In this talk, we consider solving semilinear elliptic equations with discontinuous diffusion coefficients by a two-grid method. The algorithm consists of a coarse grid solver for the original nonlinear problem, and a fine grid solver for a linearized problem. We analyze the quality of the approximations generated by the algorithm, which provides a guideline of choosing coarse-grid problem such that the approximation quality is asymptotically as good as solving the original nonlinear problem on the fine grid. (Received September 19, 2011)