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George Hsiao, Fengshan Liu and Jiguang Sun* (jsun@desu.edu), ETV 227, Delaware State University, 1200 N. DuPont Hwy., Dover, DE 19901, and **Liwei Xu**. *A coupled BEM and FEM for the interior transmission problem.*

The interior transmission problem (ITP) is a boundary value problem arising in inverse scattering theory, and it has important applications in qualitative methods. In this talk, we employ a coupled boundary element method (BEM) and a finite element method (FEM) for the ITP in two dimensions. The coupling procedure is realized by applying the direct boundary integral equation method to define the so-called Dirichlet-to-Neumann (DtN) mappings. We show the existence of the solution to the ITP for the anisotropic medium. Numerical results are provided to demonstrate the accuracy of the coupling method. (Received August 22, 2011)