1116-00-2620 **ilker Kocyigit*** (ilkerk@umich.edu) and **Liliana Borcea**. *Array Imaging with Sparsity Promoting Optimization Methods.*

In this work we study array imaging problem where the goal is to find the unknown localized sources or scatterers, which are assumed to be sparse, from the measurements of the wave field at the sensors on the array. The inverse problem is addressed by sparsity promoting optimization methods, and first we consider the case where the unknown locations are assumed to be supported on the imaging grid. We discuss and quantify the relation between the unique recoverability and the sparsity. Secondly, we investigate the general case where the unknown locations can be anywhere and not necessarily on the grid. We show that the resolution and the approximation error of the recovered image depends on the sparsity of the sources (or scatterers) and how well they are separated. The cases where the unique recoverability conditions fail and the unknown locations are not well separated are also considered. We present numerical simulations to support the theoretical results. (Received September 22, 2015)