

The Time Domain Linear Sampling Method

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Abstract

In the frequency domain, the linear sampling method (LSM) of Colton and Kirsch offers a simple way to determine the boundary of a scatterer provided sufficient multi-static data is available. However, for limited aperture data, the LSM may yield poor reconstructions. In an attempt to reduce the number of transmitters and receivers it has been suggested to use an analogue of the LSM in the time domain (the TD-LSM). In this talk I will outline the TD-LSM and the theoretical background underlying the method. I shall also describe the resulting numerical algorithm. Numerical results for the Helmholtz equation show some promise towards the desired decrease in sources and receivers. Finally I shall mention some open problems.