

1125-86-819

Christina A Frederick*, cfrederick6@gatech.edu, and **Quyeh Hyunh, Bjorn Engquist** and **Haomin Zhou**. *Seafloor identification in sonar imagery via simulations of Helmholtz equations*. Preliminary report.

We present a multiscale approach for identifying objects submerged in ocean beds by solving inverse problems in high frequency seafloor acoustics. The setting is based on Sound Navigation And Ranging (SONAR) imaging used in military, engineering, and scientific applications. The forward model incorporates simulations, by solving Helmholtz equations, on a wide range of spatial scales, allowing for detailed recovery of seafloor parameters including the material type. In order to lower the computational cost of large-scale simulations, we take advantage of a library of representative acoustic responses from various seafloor parametrizations. (Received September 12, 2016)