

Solution of the three-dimensional Helmholtz
equation using Krylov methods preconditioned by
multigrid

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We are interested in the solution of the three-dimensional Helmholtz equation in the frequency domain. This is of crucial interest in oil exploration because it enables us to have an idea on the earth sub-surface structure. We describe methods which have been implemented to solve the linear system obtained after discretization of this equation which are based on Krylov methods preconditioned by multigrid. Numerical results involving large three-dimensional problems on distributed memory computers will be presented.