NORMAL MODE AND RAY PREDICTIONS FOR THE SONAR PERFORMANCE ASSESSMENT PROBLEMS

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Two models have been developed for computing reverberation and target echo. The first is a normal mode model, suitable for computing long-range boundary reverberation in a waveguide. The interface scattering and target echo are handled using ray-mode analogies and empirical scattering functions. Time dependence is handled approximately using modal group velocities. The second model is a straight-line ray-trace model, suitable for short times. In addition to reverberation, it includes the fathometer returns since they typically dominate the reverberation in this region. Both models can be applied to the low-frequency active sonar problem from the Symposium on Validation of Sonar Performance Assessment Tools. The ray-trace model is also suitable for the orca-salmon high-frequency short-range sonar problem. Initial predictions for reverberation and target echo will be presented at the Symposium, for comparison with the results from other participants.