Abstract Submitted
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A Model for the Internal Wave field Produced by a Horizontally Moving Body and its Wake in a Stratified Fluid[1] JAMES ROTTMAN, Science Applications International Corporation, DAVE BROUTMAN, Computational Physics, Inc., GEOFF SPEDDING, University of Southern California, PETER DIAMESSIS, Cornell University — A linear theory is derived to describe the evolution of the internal wavefield generated by a horizontally moving body in a stratified fluid. The theory involves a ray solution in wavenumber coordinates that is mapped into a spatial solution by inverse Fourier transform. This is a more practical approach than calculating the ray solution directly in the spatial domain, and it is general enough to treat background flows with depth dependent shear and stratification. In this talk a novel method is described by which the ray calculations can be initialized using data, from either experimental measurements or direct numerical simulations, of the wave flow just outside the turbulent wake of the body. Here comparisons are made of the theory with tank experiments and direct numerical simulations of a towed sphere in a uniformly stratified background.

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