

Abstract Submitted
for the DFD11 Meeting of
The American Physical Society

Subsurface Signature of a Reflecting Internal Wave Beam QI

ZHOU, PETER DIAMESSIS, Cornell University — We examine the subsurface signature of an internal wave beam reflecting off a free-slip top surface in a linearly stratified water column using 3-D direct numerical simulations. A spectral multidomain penalty scheme in the vertical enables finer resolution of the subsurface region. The wave beam is modelled based on a recently obtained characterization of the internal wave field radiated by a stratified turbulent wake of a towed sphere. Subsurface current and strain fields are quantified as a function of beam geometry, steepness and phase-line-tilt angle with respect to the vertical. We also compute the induced surface displacements and discuss the potential of nonlinear harmonic generation.

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Date submitted: 28 Jul 2011

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