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Internal Waves Generated by Unsteady Impulsive Forcing - Laboratory Experiments KARA SHIPLEY, ALAN BRANDT, MATTHEW PAOLETTI, JHU/APL — Internal waves are generated in laboratory experiments using impulsive forcing to further the understanding of unsteady source mechanisms. Impulsive forcing events, unlike steady or periodic forcing, are both transient and broadband, and have been the focus of only a limited number of fundamental studies. The experiments presented here examine the dynamics of the release of a homogeneous heavy fluid into a fluid with a density-stratified layer above a region of constant density. The miscible forcing volume is visualized utilizing fluorescent dye, which allows for measurements of the plume energy flux, while the internal wave field is characterized by measuring the density fluctuations with an array of conductivity probes. In all cases, the uniformly stratified region has a buoyancy frequency of $N =$ 1 rad/s, the depth of which varied 12-50% of the total fluid depth. The descending plume entrains ambient fluid and subsequently rebounds to an equilibrium level. The effects of varying the density and volume of the forcing fluid on the energy flux of the radiated internal waves are presented.

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