

Abstract Submitted  
for the DFD09 Meeting of  
The American Physical Society

**Internal Waves in Shear Flow** SCOTT WUNSCH, ALAN BRANDT,  
Johns Hopkins University Applied Physics Laboratory — Internal waves propagating through a shear flow can exchange energy with the mean flow. Waves may be reflected or transmitted through the shear, gaining or losing energy by exchange with the mean flow field. This effect is most pronounced at a “critical level,” a depth where the wave horizontal phase velocity matches the local mean flow speed. Laboratory experiments are underway to study internal waves interacting with shear using the synthetic schlieren measurement technique. Particular interest is on conditions leading to internal wave amplification, which based on theory should occur when the Richardson number is less than  $1/4$ . Experimental results indicate that, as the stratified shear flow is subject to instabilities as Richardson number approaches  $1/4$ , internal wave interactions are more complex than the idealized theories predict.

Scott Wunsch  
Johns Hopkins University Applied Physics Laboratory

Date submitted: 05 Aug 2009

Electronic form version 1.4