

**Date:** December 10, 2004

**Time:** 10:30 AM

**Location:** Olin 305

**Speaker:** Dr. Mohsen Badiey  
College of Marine Studies  
University of Delaware

**Title:** "Acoustic Intensity Fluctuations in Shallow Water with Internal Waves"

### **Abstract**

Broadband acoustic data (30-160 Hz) show signal intensity fluctuations in the presence of ocean internal waves. Temporal variations in the intensity of the received signals were observed with 10 to 15 min periodicity. These fluctuations are synchronous in water depth and are dependent upon the water column variability. They can be explained by significant horizontal refraction taking place when the orientation of the acoustic track is nearly parallel to the fronts of the internal waves. Analyses based on the equations of vertical modes and horizontal rays and on a parabolic equation in the horizontal plane are carried out and show strong frequency-dependent behavior of the acoustic intensity. Good agreement is obtained between theoretical calculations and experimental data.