



Internal wave interactions

Caixia Wang (1), Richard Pawlowicz (2), Meng Su (1), and Youkai Li (1)

(1) Laboratory of Physical Oceanography, Ocean University of China, Qingdao, China (cxwang@ouc.edu.cn), (2) University of British Columbia, Vancouver, Canada (rich@eos.ubc.ca)

Internal wave interactions are studied by geophysical observations, laboratory experiment, and Kadomtsev and Petviashvili (KP) equation. Although nonlinear interactions that occur when two large internal waves collide at oblique angles are often observed in the natural world, quantitative and theoretical aspects of these interactions are only poorly understood. The available analyses are generally theoretical or the result of limited numerical experimentation, with few (if any) quantitative field measurements. Internal wave interactions are observed in the Strait of Georgia, Canada and in a water tank in Qingdao, China. The observational and experimental technique allows us to quantify the interaction details, such as the speed and direction of each wave, as well as details of phase shifts induced by interactions. The KP equation is then applied to model the observed oblique interactions.