Mathematical analysis of near-critical reflection of internal waves

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We consider a two-dimensional weakly nonlinear Boussinesq system for internal waves in a domain with a sloping boundary. Starting from an incident wave packet hitting the boundary with a near-critical angle with respect to the angle of the slope, we construct an approximate solution given by: the incident wave packet, some boundary layer terms, a second harmonic wave packet, a mean flow and other nonlinear terms of lower order. We prove the stability of the approximation and the convergence to the weak solutions of the original system. Our main references are the works by Thierry Dauxois and collaborators.

Joint work with: Anne-Laure Dalibard (*UPMC, Sorbonne Université*) and Laure Saint-Raymond (*UMPA, ENS Lyon*).