1086-76-1046 **Peter Zhevandrov*** (pzhevand@umich.mx), Fac. de Ciencias Físico-Matemáticas, Universidad Michoacana, Ciudad Universitaria, 58030 Morelia, Mich., Mexico, and **María Isabel Romero Rodríguez** (mariarr@unisabana.edu.co), Facultad de Ingeniería, Universidad de La Sabana, Campus Universitario "Puente del Común", Chía, Cun. , Colombia. *Scattering and total reflection for oblique waves in a two-layer fluid.*

We study trapped modes and the scattering problem for oblique waves in a two-layer fluid in the shallow water approximation with a weakly perturbed depth, $h = h_0 + \epsilon f(x)$, $\epsilon \ll 1$, where f is continuously differentiable and has compact support. We assume that the perturbation is cylindrical. The linearized system describing oblique waves harmonic in time in this setting has the form of two coupled second order ODEs with the spectral parameter $\lambda = \omega^2$ (ω is the frequency). In the absence of the perturbation, the continuous spectrum is the ray $\lambda \geq \lambda_1 > 0$ with an embedded cut-off $\lambda_2 > \lambda_1$. This spectrum has multiplicity 2 for $\lambda_1 < \lambda < \lambda_2$, and multiplicity 4 for $\lambda > \lambda_2$. Under the perturbation, the cut-offs $\lambda_{1,2}$ can produce eigenvalues. For a "bump" on the bottom, there exists an eigenvalue to the left of λ_1. Under certain "orthogonality conditions", the other cut-off also produces an eigenvalue. If the "orthogonality conditions" are not satisfied, this eigenvalue becomes a complex pole of the reflection coefficient of the corresponding scattering problem. In this case, the reflection coefficient is almost 1 when λ is equal to the real part of the pole. (Received September 18, 2012)