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# Experimental modelling of non-linear internal wave transform at the shelf edge

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The experimental series has been performed in the stratified tank The tank with its overall dimensions L*B*H = 12.0*0.5*1.0 m was filled with the two-layer stratified fluid (fresh water over salt water) with the layer's thickness H1 = 0.02 m, H2 = 0.16 m and respective densities rho1 = 1.0 kg/dm3, rho2 = 1.22 $\pm$ 0.01 kg/dm3. The side walls of the tank and the shelf modell was made of the optic glass.

A horizontal shelf of the height Hs = 0.15 m, the width Ys = 0.03 m and length of 0.63 m was mounted along the side wall of the tank at its mid-length. The transition zone between the wall and the shelf (Ys = 0 $\div$ 0.03 m) had the length of 0.08 m.

The solitary wave was produced by a volume of the fresh water put immediately at the level of the fluid interface at one of the sides of the tank. The amplitude of the soliton was determined by the amount of added water.

Plane motion of fluid particles in the solitary wave and longitudinal propagation of the solitary wave along the tank was transformed at the shelf edge into the transverse motion of short periodic waves producing intense three-dimensional wave motion at the level of the pycnocline.

The visualization of the vertical displacement of the horizontal layers near the interface between two homogeneous fluids was provided by the shadow installation IAB-451 with the working field of 0.25 m in diameter.

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