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Experiments on Normal Modes in a Tank with Corrugated Bottom ANDRZEJ HERCZYNSKI, Boston College, PATRICK WEIDMAN, University of Colorado, Boulder, LOUIS HOWARD, MIT, JIE YU, North Carolina State University — We report an experimental investigation of standing waves in a rectangular container of corrugated bottom partially filled with water. The study was stimulated by the theory of Howard and Yu[1,2] predicting the existence of resonant normal modes — called Bragg resonance — wherein the amplitude grows exponentially, either from one end of the channel to the other or from the center out in each direction, depending on the endwall phases of the corrugated bottom. The tank, with adjustable length between 450 and 490 cm, width 13 cm, and height 30 cm, is fitted with a sinusoidal bottom (made of high density polyurethane foam) of wavelength 52 cm and peak-to-peak amplitude 5 cm. Waves are excited by shaking the container in periodic horizontal motion using an electrical motor. The amplitude of the standing waves was recorded using two sensitive pressure probes and also observed and filmed through the transparent acrylic walls. Experimental results are in essential agreement with the theory.

[1] *J. Fluid. Mech.* (2007), *vol.* 593, *pp.* 209-234.
[2] *J. Fluid. Mech.* (2010), *vol.* 659, *pp.* 484-504.

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