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Experimental observation of solitons propagating in a hydromechanical array of one-way coupled oscillators[1] KELLY M. PATTON, JAMES GALLAGHER, JOHN F. LINDNER, The College of Wooster, Wooster OH 44691 — Arrays of two-way coupled oscillators are familiar and have been extensively studied. However, arrays of one-way coupled oscillators have been studied only in the last five years, mainly computationally and theoretically. One-way coupling seems impossible, because it appears to violate Newton's third law (and energy conservation). However, we have constructed arrays of one-way coupled oscillators by enabling each oscillator to modify an external force that does work on a neighboring oscillator. We observe solitons propagating in our arrays and compare their behavior with computer simulations and theory.

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