

Abstract Submitted  
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**Experimental study of interfacial waves induced by surface waves in muddy water**<sup>1</sup> ERIC MAXEINER, ROBERT A. DALRYMPLE, Johns Hopkins University — A peculiar feature has been observed in a laboratory tank with monochromatic surface waves propagating in muddy water with a thin layer of clear surface water: a quasi-stable set of interfacial waves that appear as longitudinally-oriented rotating tubes at the mud-water interface. These “interfacial tubes” are spatially periodic and temporally subharmonic structures whose direction of apparent rotation alternates with each passing surface wave crest. Rotation results from coupled upwelling and downwelling of clear surface water and muddy water below. The interfacial tubes appear to be standing nonlinear interfacial waves that result from a three-wave interaction involving a surface wave train and two interfacial wave trains. This is believed to be the first documented observation of this phenomenon in its nonlinear form. The topics covered in this presentation are relevant to the study of internal wave generation, wave damping and nearshore mixing processes.

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