

Abstract Submitted  
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**Experimentally Modeling Black and White Hole Event Horizons via Fluid Flow** MARC E. MANHEIM, JOHN F. LINDNER, NIKLAS MANZ, The College of Wooster — We will present a scaled down experiment that hydrodynamically models the interaction between electromagnetic waves and black/white holes. It has been mathematically proven that gravity waves in water can behave analogously to electromagnetic waves traveling through spacetime. In this experiment, gravity waves will be generated in a water tank and propagate in a direction opposed to a flow of varying rate. We observe a noticeable change in the waves spreading behavior as it travels through the simulated horizon with decreased wave speeds up to standing waves, depending on the opposite flow rate. Such an experiment has already been performed in a 97.2 cubic meter tank [Rousseaux et al., Observation of Negative-frequency Waves in a Water Tank: A Classical Analogue to the Hawking Effect?, *New J. Phys.* 10(5), 053015 (2008)]. We reduced the size significantly to be able to perform the experiment under normal lab conditions.

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