

Abstract Submitted
for the DFD17 Meeting of
The American Physical Society

The hydraulic analogy revisited PATRICK SPRENGER, MARK HOEFER, University of Colorado Boulder — The so-called “hydraulic analogy” between supercritical shallow water flow and supersonic compressible gas flow was leveraged through a table-top water table experiment to understand the interaction of supersonic flow with stationary objects. However, surface water waves are intrinsically dispersive and the wave patterns generated were, in fact, dispersive shock waves, wholly different from their previously assumed viscous shock counterparts. In this talk, the water table experiment is studied as a dispersive hydraulic analogy, akin to other nonlinear dispersive media such as superfluids and intense laser light propagation. The steady, oblique dispersive shock waves resulting from a supercritical flow impinging on a wedge obstacle will be examined theoretically and experimentally.

Patrick Sprenger
University of Colorado Boulder

Date submitted: 28 Jul 2017

Electronic form version 1.4