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Numerical and Experimental Study of Scott Russell's Solitary Waves JEONGWHAN CHOI, Korea University, SHU-MING SUN, Virginia Polytech, SANGHO OH, DALSOO LEE, KORDI, SUNG-IM WHANG, Ajou University, KOREA UNIVERSITY TEAM, VIRGINIA POLYTECH TEAM, KORDI TEAM — The motion of solitary waves on the free surface of a layer of water is studied. The waves are generated by a moving bump placed at the bottom or a pressure source on the surface. The problem is first discussed using a model equation, called force Kortweg-de Vries (FKdV) equation. Then, such forced waves are studied experimentally using a water tank with a moving bump at the bottom. The results from the FKdV equation match very well with those from the experiments if the solitary wave is not near the wave of maximum amplitude. Finally, it is shown that the solitary wave observed by Scott Russel in 1834 is just one of the forced solitary waves presented here.

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