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Experimental observation of gravity-capillary solitary waves generated by a moving air-suction[1] BEOMCHAN PARK, YEUNWOO CHO, Korea Advanced Institute of Science and Technology — Gravity-capillary solitary waves are generated by a moving air-suction forcing instead of a moving air-blowing forcing. The air-suction forcing moves horizontally over the surface of deep water with speeds close to the minimum linear phase speed $c_{\min}$ =23cm/s. Three different states are observed according to forcing speed below $c_{\min}$. At relatively low speeds below $c_{\min}$, small-amplitude linear circular depressions are observed, and they move steadily ahead of and along with the moving forcing. As the forcing speed increases close to $c_{\min}$, however, nonlinear 3-D gravity-capillary solitary waves are observed, and they move steadily ahead of and along with the moving forcing. Finally, when the forcing speed is very close to $c_{\min}$, oblique shedding phenomena of 3-D gravity-capillary solitary waves are observed ahead of the moving forcing. We found that all the linear and nonlinear wave patterns generated by the air-suction forcing correspond to those generated by the air-blowing forcing. The main difference is that 3-D gravity-capillary solitary waves are observed ahead of the air-suction forcing, whereas the same waves are observed behind the air-blowing forcing.

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