

Abstract Submitted  
for the DFD16 Meeting of  
The American Physical Society

**Generation of realistic tsunami waves using a bottom-tilting wave maker**<sup>1</sup> YONG SUNG PARK, Univeristy of Dundee , JIN HWAN HWANG, Seoul National University — Tsunamis have caused more than 260,000 human losses and \$250 billion in damage worldwide in the last ten years. Observations made during 2011 Japan Tohoku Tsunami revealed that the commonly used waves (solitary waves) to model tsunamis are at least an order-of-magnitude shorter than the real tsunamis, which calls for re-evaluation of the current understanding of tsunamis. To prompt the required paradigm shift, a new wave generator, namely the bottom-tilting wave generator, has been developed at the University of Dundee. The wave tank is fitted with an adjustable slope and a bottom flap hinged at the beginning of the slope. By moving the bottom flap up and down, we can generate very long waves. Here we will report characteristics of waves generated by simple bottom motions, either moving it upward or downward from an initial displacement ending it being horizontal. Two parameters, namely the initial displacement of the bottom and the speed of the motion, determine characteristics of the generated waves. Wave amplitudes scale well with the volume flux of the displaced water. On the other hand, due to combined effects of nonlinearity and dispersion, wavelengths show more complicated relationship with the two bottom motion parameters. We will also demonstrate that by combining simple up and down motions, it is possible to generate waves resembling the one measured during 2011 tsunami.

<sup>1</sup>YSP acknowledges financial support from the Royal Society of Edinburgh through the Royal Society of Edinburgh and Scottish Government Personal Research Fellowship Co-Funded by the Marie-Curie Actions.

Yong Sung Park  
Univeristy of Dundee

Date submitted: 01 Aug 2016

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