1116-76-2233 **Olga Trichtchenko***, o.trichtchenko@ucl.ac.uk, and **Jean-Marc Vanden-Broeck**, **Emilian Parau** and **Paul Milewski**. *Computing Three-Dimensional Water Waves.*

The goal of this work is to build on previous results [1,2] to produce a more efficient and accurate method for computing solutions to Euler's equations for water waves in three dimensions. We solve the equations via a numerically implemented boundary integral equations method and employ techniques such as parallelization, preconditioning and iterative methods. This work uses the ideas seen in [4], but under a variety of conditions such as the presence of gravity, surface tension and the effects due to ice. In this talk, we will give details of the current method and present the solutions obtained from implementation in Python.

References

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[3] R. Pethiyagoda, S. W. McCue, T. J. Moroney and J. M. Back *Jacobian-free Newton-Krylov methods with GPU acceleration for computing nonlinear ship wave patterns.* J. Comput. Phys. (2014).

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