1116-76-2230 **Olga Trichtchenko***, o.trichtchenko@ucl.ac.uk, and **Bernard Deconinck** and **Jean-Marc Vanden-Broeck**. *Comparison of Stability of Solutions to Hamiltonian Water Wave Models.*

The goal of this work is to compare and contrast the stability results for solutions to different models for water waves. It is known that high frequency instabilities exist for the nonlinear solutions to Euler's equations describing water waves [1,2], however not all models exhibit these instabilities. We will use a generalization of the theory used to predict their existence in periodic Hamiltonian systems first proposed by MacKay [3], to see which water wave models meet the necessary conditions for instabilities to arise. We will then examine how these instabilities change if different conditions at the surface are included.

References

[1] B. Deconinck and K. Oliveras, *The instability of periodic surface gravity waves.* J. Fluid Mech., Vol 675 (2011), pp.141-167.

[2] B. Deconinck and O. Trichtchenko, *Stability of periodic gravity waves in the presence of surface tension.* European Journal of Mechanics - B/Fluids, Vol 46 (2014), pp.97-108.

[3] R. S. MacKay, *Stability of equilibria of Hamiltonian systems.* Nonlinear Phenomena and Chaos, (1986) pp.254-270.

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