

Abstract Submitted
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Precession resonance mechanism in deep-water gravity surface waves¹ MIGUEL BUSTAMANTE, University College Dublin, DAN LUCAS, University of Cambridge — Discovered by Bustamante *et al.* in 2014 and published in *Phys. Rev. Lett.* in the same year², **precession resonance** is a mechanism whereby strong nonlinear energy transfers occur between modes of oscillations whose frequencies are detuned: the amplitude-dependent precession frequencies of the phases help restore the resonance, hence the name “precession resonance”. After explaining how this mechanism works and how robust it is, we will discuss new applications of this effect in systems of technological interest, focusing on deep-water gravity surface waves. We report transfer efficiencies of up to 40%, depending on the numerical-experimental setup. All evidence gathered so far points to the conclusion that, to leading order, this effect is dominated by triad interactions at small (but finite) amplitudes. Joint work with Dan Lucas (DAMTP, Cambridge).

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²M.D.Bustamante, B. Quinn and D. Lucas, *Phys. Rev. Lett.* **113**, 084502 (2014)

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