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Internal wave–vorticity coupling for an oscillating disk[1] BRUNO VOISIN, LEGI, CNRS & University of Grenoble, SYLVAIN JOUBAUD, THIERRY DAUXOIS, ENS de Lyon, CNRS & University of Lyon — In a density-stratified fluid, viscosity couples internal waves with vertical vorticity. So far this coupling used to be neglected in analytical studies and only the viscous attenuation and spreading of the waves was taken into account, except in a very recent study of the oscillations of a horizontal circular disk.[2] We investigate the relations between the previous analytical approaches of the disk, considering either inviscid or viscous propagation of the waves and either free- or no-slip conditions at the disk, and compare their output with an original approach based on the boundary integral method. In particular, the role of the Stokes number is clarified. The analytical predictions are compared with contact measurements for vertical oscillations[3] and with original PIV measurements and visualizations for both vertical and horizontal oscillations.

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[2]A. M. J. Davis & S. G. Llewellyn Smith, J. Fluid Mech. **656**, 342–359 (2010).
[3]R. N. Bardakov, A. Yu. Vasil'ev & Yu. D. Chashechkin, Fluid Dyn. **42**, 612–616 (2007).

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