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# Inertial wave solutions in (tilted) cuboids

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Semi-analytical and numerical solutions of inertial waves are presented in cuboids aligned with the vertical rotation vector. For (unforced) inertial waves in a tilted cuboid, by contrast only numerical simulations are given. Tilting the cuboid leads to symmetry breaking of reflecting inertial waves, such that a semi-analytical approach fails. The numerical solutions are based on a compatible discretization of the Hamiltonian formulation of the rotating, incompressible Euler equations in three dimensions. The conservative structure of the wave phenomena is therefore maintained on a discrete level. A discontinuous Galerkin finite element method is employed as it naturally aligns with the Hamiltonian integral formulation. For the untilted cuboid, it will be shown that these numerical solutions are more accurate than the semi-analytical solutions. Moreover, the simulations seem to indicate that there are remnants of wave attractors in tilted cuboids even for the free, unforced case. The wave attractor is a prominent feature found by semi-analytical methods for the titlted, infinitely-long rotating channel. The compatible numerical approach for the case with forcing will be discussed.

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• S. Nurijanyan, O.B. and L.R.M. Maas 2013: Inertial waves in a cuboid. Note on series solutions. Submitted Phys. Fluids. http://eprints.eemcs.utwente.nl/22540/