

Gravity waves with constant vorticity

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The simplest vortical flow that supports surface waves is the case of constant vorticity. This case can be reduced to that of free surface potential flow with modified dynamic and kinematic boundary conditions to account for the added shear. There are several analytical and numerical results for waves of this type in the literature, and our goal is to map out the behaviour in the interior of the fluid, specifically: (1) The number and location of stagnation points - in 2 physically relevant frames of reference; (2) The pressure inside the fluid and (3) Particle paths. If time permits we will discuss some further numerical challenges under investigation.