



## **2D Propagation of Water Waves in the Presence of Vorticity**

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Propagation of water waves in coastal zones is mainly affected by the influence of currents and bathymetry variations. A linear, elliptic equation allowing to describe the propagation of water waves in arbitrary, slowly varying, currents and bathymetry, was initially derived by Kirby (1984). His approach was based on the linearization of the depth integrated lagrangian, assuming the current profile not to depend on depth.

In this work, we derive a linear equation, extending Kirby's approach to currents varying linearly with depth. A numerical study is developed, aiming to demonstrate the influence of the vorticity on propagation. Both one and two dimensional cases of propagation are considered, and discussed.

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