عنوان مقاله:

Numerical Simulation of Waves Generated by ships in Shallow Water

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خلاصه مقاله:

Shallow-water ship-waves, known as wash waves, are important in marine engineering. These waves can affect coastal structures and change near-shore morphology. They can also cause damage to ship itself in finite depth channels. There are different theoretical methods to consider these waves. In this paper shallow-water ship-waves are simulated numerically. Applying Michell's thin-ship theory, flow field far from the ship is investigated. The relevant ship is considered thin and chosen from Series 60. The numerical simulation is performed in subcritical, critical and supercritical regimes for different depth Froude numbers, constant ship speeds and water depths. In this study the flow is considered incompressible and irrotational. However for the accuracy of simulation the effect of eddy viscosity is then considered. Furthermore the effects of the boundary layer are considered. The numerical results were compared with other models and experimental results. It showed that Michell's thin-ship theory could simulate this kind of waves with grate accuracy and reliability.

کلمات کلیدی:

Ship waves, Shallow water, Far field, Michell's thin-ship theory

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