

Abstract for Danish Offshore Technology Conference 2022

Title:

Direct Surface Description (DSD) method for simulation of ocean waves

Authors:

Jesper Roland Kjærgaard Qvist, Erik Damgaard Christensen

Describe the content of poster:

The present state of the art for simulation of ocean waves with the Computational Fluid Dynamics (CFD) tool OpenFOAM suffers from spurious velocities near the free surface of the waves. The poster presents the recent advances with the newly developed Direct Surface Description (DSD) method implemented in OpenFOAM to solve this issue. The DSD method eliminates the spurious velocity problem and enables faster and more accurate simulations of ocean waves. The poster focuses on showing that the DSD method can handle 3D simulations of complex free surface flows such as breaking ocean waves, as seen from Figure 1.

Time: 51.60 s

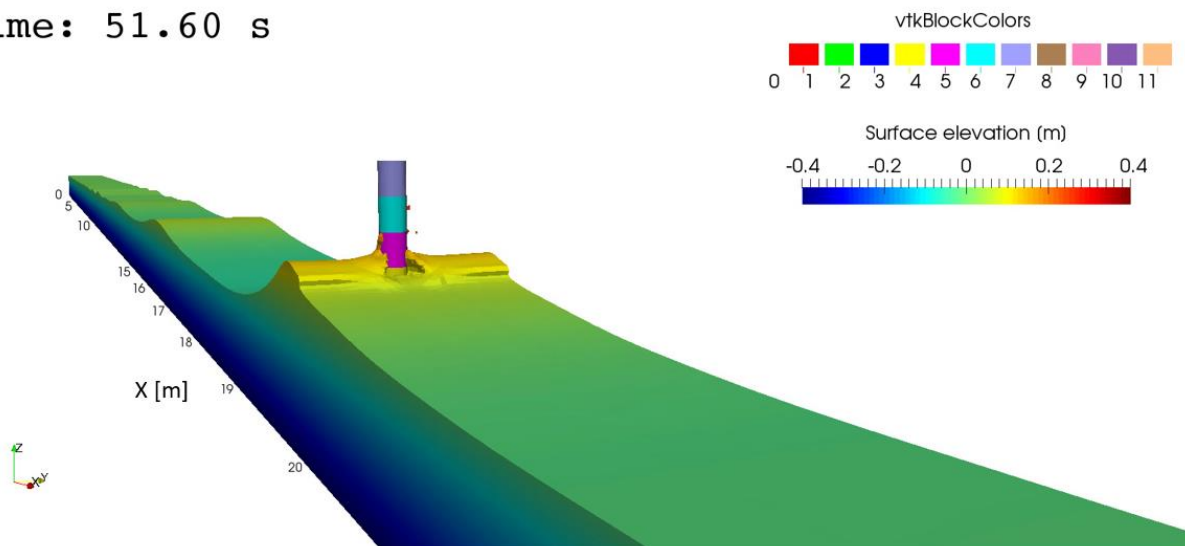


Figure 1: Simulation of breaking wave impact on vertical cylinder with the DSD method (Qvist & Christensen, 2022).

Qvist, J. R. K., & Christensen, E. D. (2022). Development and implementation of a Direct Surface Description method for free surface flows in OpenFOAM. *Coastal Engineering*, 104227. <https://doi.org/10.1016/j.coastaleng.2022.104227>