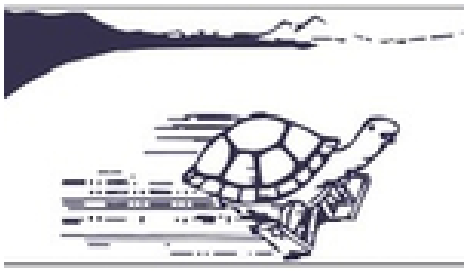

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Simulating hydroelastic slamming by coupled Lagrangian-FDM and FEM

Thursday, 15 October 2020 14:00 (30 minutes)

Hydroelastic effects during slamming of high-speed marine vehicles affect the development of the pressure along their bottom. The aim of this study is to investigate coupling process of a novel CFD method and a FEM structural solver for simulation of hydroelastic slamming. As slamming is characterised by violent and strongly nonlinear fluid–structure interaction, the flow solver is based on a Lagrangian, volume–conservative, second–order accurate method, meshless FDM. Rhoxyz fluid solver is coupled to CalculiX structural solver, through a partitioned bidirectional coupling tool, preCICE. After the validation of coupling using a dam break experiment, the effect of hydroelasticity in slamming is studied by analysing the pressure and deformations of the structure during water entries of a deformable symmetrical wedge with low angle of deadrise.

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