

A numerical investigation of the Slamming event thru FSI analysis

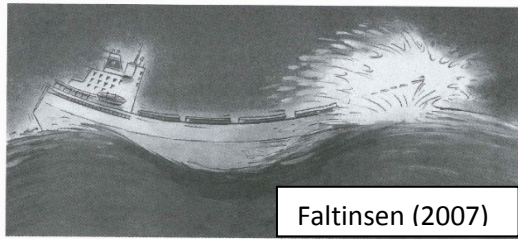


Figure 8.8. Artist's impression of bow slamming causing global elastic vibrations (whipping) of the ship's hull. (Artist: Bjarne Stenberg)

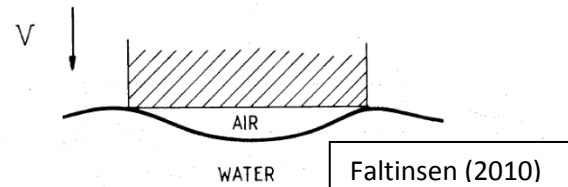


Fig. 9.4. Deformation of the free-surface and formation of an air pocket during entry of a body with a horizontal flat bottom.

Slamming events on ship hulls and offshore installations creates very high local pressures which can result in local deformation of the structure. This is a Fluid –Structure-Interaction problem where the properties of the Fluid and the Structure plays an important role. The fluid side includes both air and water which gives a transient, compressible, two-phase, viscous problem which must be solved together with a transient, nonlinear dynamic problem on the structure side. The Slamming event occurs locally during a very short time which makes the resolution in space and time very important.

The aim of the project is to understand the physics of the Slamming event thru numerical analysis of the Fluid, the Structure and the Interaction. Tools available for the analysis are StarCCM+ and Abaqus.

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