

Numerical Simulation of Ship-Ship Interaction with Overset Meshes

Contact: philipp.mucha@uni-due.de, Fon: +49 (0)721 9726 3455

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1 BACKGROUND

Growing vessel sizes and a predicted increase in future traffic on European waterways, as well as recent accidents in inland waterway shipping raise the complexity of maneuvering prediction which calls for sophisticated simulation methodology. Field methods drawing upon the solution of the Reynolds-averaged Navier-Stokes (RANS) equations are by now able to consider relative motions between floating bodies. One possibility is the overset mesh technique which has reached a degree of maturity that allows for an application to a host of problems in ship hydrodynamics. The scope of this thesis is to investigate the suitability of this technique for ship-ship interaction problems.

2 TASKS

The solution of the above outlined task will roughly follow the below steps:

1. Introduction to the overset mesh technique
2. Literature survey
3. Simulation of a ship-ship interaction problem with a RANS-CFD code
4. Discussion
5. Documentation

Depending on the findings and progress of the work, as well as whether the student will work on a Bachelor or Master thesis, this agenda will be changed accordingly (which can also mean be extended!). Given a successful solution of this problem we will use the findings to write a scientific paper which can be submitted to a conference in the field.