

Panel mesh generation for wave resistance calculations of ships based on generalized B-spline surfaces

Student Research Project / Master Thesis

A hull form is usually represented by a collection of tensor-product B-spline patches. This complicates the generation of panel meshes because the meshing algorithm has to identify coincident patch boundaries. This is a difficult task and often requires manual adjustments. Generalized B-splines are an alternative that allows represent hull forms with a single B-spline surface. This potentially simplifies the generation of panel meshes on the surface.

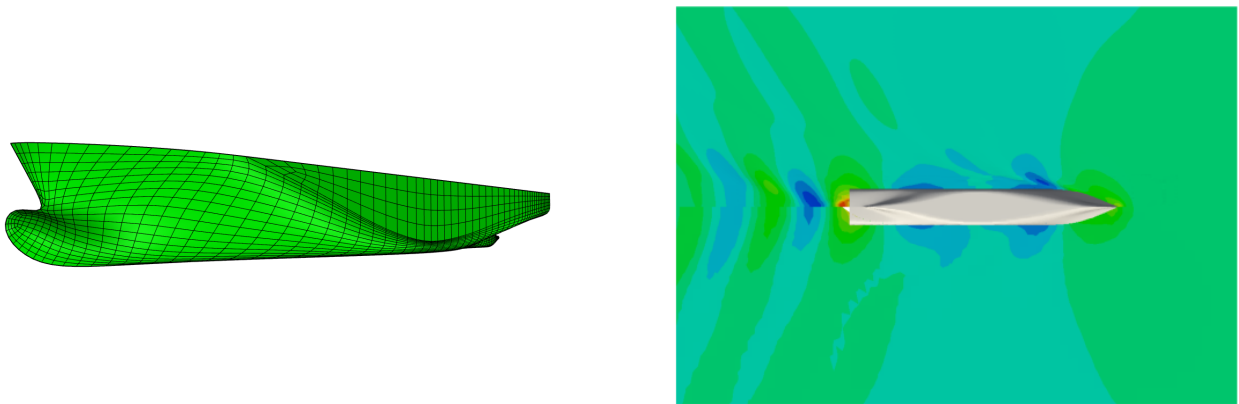


Figure 1: Left: Example of a panel mesh that is generated based on generalized B-spline surface. Right: Comparison of two potential flow computations of the wave resistance.

The goal of this work is to analyze the panel mesh generation for potential flow computations of the wave resistance based on generalized B-splines. The quality requirements for panel meshes and existing algorithms should be reviewed. The results are used to develop an algorithm that generates panel meshes based on a generalized B-spline surface.

The final working steps are coordinated with the supervisor not later than four weeks after the thesis has started. This thesis requires good programming skills (C++) and a profound mathematical background.

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