

Adjoint-based Shape Optimization of a Ship Hull using Various Propeller Resolution Methods

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The project is concerned with primal and associated adjoint models for ship hulls and propulsion systems. The focus of the presentation is devoted to efficient primal modelling of the transient rotational motion with geometrically resolved methods. The final aim is on economic / thrifty approaches to the transient rotational motion, using hybrids of non-resolved moving reference frame and resolved grid rotation. The strategy will be assessed against alternative methods, i.e. resolved rotating meshes moving reference frame approaches and simple body-force models, for generic verification examples and an established ship hydrodynamic validation case (Japan bulk carrier). Finally the route towards an adjoint hybrid time resolving approach will be outlined.