

PLANING HULL HYDRODYNAMICS

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ABSTRACT

The focus of this session is on high speed planing crafts hydrodynamics in calm water and in waves. During last years the computational fluid dynamics (CFD) technique has also rapidly developed as a novel tool to address calm water resistance prediction and study of complex phenomena characteristic for the planing regime such as whisker spray, air trapping and pressure area wetted surface when hull has one or more transversal steps. However, due to the complexity of interactions between water waves, the presence of free surface and forward speed, the problems of wave-induced ship motions and loads are still far from being satisfactorily addressed, especially for problems involving high forward speed, instantaneous wetted surface, irregular sea waves, and strong nonlinear slamming loads. CFD modelling of planing hulls requires expert users to decide on different moving mesh techniques (overset/chimera and morphing grid), turbulence models, domain boundaries and convergence criteria.

The contributions addressing novel numerical and experimental tools applied to the relevant problems for “energy efficiency of high added values ships” are especially welcome.