Contribution ID: **89** Type: **Paper**

TIME DOMAIN ASSESSMENT OF VERTICAL MOTIONS OF PLANING HULLS

Thursday, 21 June 2018 10:00 (15 minutes)

Operating in high speed regime leads to hydrodynamic lift and displaced volume diminution, consequently the boat experiences the changing of trim, rise of centre of gravity and wetted surface decreasing. Standard linear model, for planing hulls seakeeping assessment, based on the linear free surface condition and small changes in wetted surface are not applicable at all.
This work is focused on the comparison of two mathematical models for planing hulls vertical motions. Both mathematical models make recourse to the "Strip Theory", at each instant the effective immersed volume is computed, taking into account the non-linear effects. Main differences between them are in pitch small angle assumption and in hypothesis of horizontal velocity equal to ship's speed.
The developed mathematical models have been validated against experimental results for modern warped hull form at different speeds. The availability of specific and dedicated experimental tests allowed to compare time series of experimental and numerical data results, not only typical values reported in literature, and furthermore to analyse them in the same manner.
Comparing the results was possible to assess the quality of the codes, commenting on the applicability and sensibility of them for planing hull vertical motions assessment.

Primary author: Dr PENNINO, Silvia (University of Naples "Parthenope")

Co-authors: Prof. SCAMARDELLA, Antonio (University of Naples "Parthenope"); Prof. BERTORELLO, Carlo (University of Naples Federico II); Prof. BEGOVIC, Ermina (University of Naples Federico II)

Presenter: Prof. BEGOVIC, Ermina (University of Naples Federico II)

Session Classification: Hydrodynamics

Track Classification: Stability, Seakeeping, Maneuverability