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Vertical motions assessment of an Offshore Supply Vessel in concept design stage

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The main hydrodynamic characteristics of an Offshore Vessel are mostly referring to motion behaviour in rough sea. For such kind of ships, good seakeeping performances are mandatory, and, besides dynamic positioning quality, maybe more relevant than purely propulsive issues. The seakeeping performances of a ship are strongly influenced by main geometric parameters selected since concept design stage. Means that, to improve the designers' ability to properly select the best preferred design, enhanced methods should be implemented in such a way to accurately determine seakeeping performances as function of the more significant geometrical parameters and non-dimensional ratios. In the present work a procedure, based on the determination of multiple regression models with different parameter combinations, has been developed to reproduce the vertical motions transfer functions of a generic supply vessel at different encounter angles and operational speeds. The regressions have been obtained from 2D strip theory calculations on a family of supply vessels, ensuring a sufficiently accurate estimate of heave and pitch motions since concept design stage.

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