Stochastic procedures for extreme wave induced responses in flexible ships - DTU Orbit (10/12/2018)

Stochastic procedures for extreme wave induced responses in flexible ships

Different procedures for estimation of the extreme global wave hydroelastic responses in ships are discussed. Firstly, stochastic procedures for application in detailed numerical studies (CFD) are outlined. The use of the First Order Reliability Method (FORM) to generate critical wave episodes of short duration, less than 1 minute, with prescribed probability content is discussed for use in extreme response predictions including hydroelastic behaviour and slamming load events. The possibility of combining FORM results with Monte Carlo simulations is discussed for faster but still very accurate estimation of extreme responses. Secondly, stochastic procedures using measured time series of responses as input are considered. The Peak-over-Threshold procedure and the Weibull fitting are applied and discussed for the extreme value predictions including possible corrections for clustering effects.

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