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Evaluation of extreme wave loads for slender tubular structures

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To design particular Offshore Vessels appendages like stingers, it is common practice to search extreme values of wave induced loads. The standard methods applied are performing the analysis by means of a Weibull distribution. The necessity of offshore industry to operate with severe sea state and the complexity of the considered geometry can be source of evident nonlinearities in the peaks distribution of the exciting force. In the specific, the adoption of a standard Weibull approach is not indicated for accurately predict the extreme load value. The adoption of more accurate distributions suitable to capture peaks non-linearity will ensure to overcome or capture possible multi-modal behaviours of the considered population. Such techniques can be applied since early design stage also to calculation results. In the present work a methodology is applied to calculation results for a stinger geometry, where Morison theory is applied to evaluate wave loads considering shield effects between the single elements.

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