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Measurements of Boat Motion in Waves at Durban Harbour for Qualitative Validation of Motion Model

The Response Amplitude Operator (RAO) theory was used to develop a mathematical model of boat angular motion. Measurements were made on a harbour patrol boat on sea runs off Durban Harbour. Measurements were first calibrated for axis alignment and then analysed using power spectral density techniques. An estimated roll radius of gyration of 0.4 times the breadth of the vessel was used in the model. Comparison of the measurements to the model shows some correspondence in the frequencies present in the spectra. Discrepancies arise, however, in the spectral power values. The model could be improved by parameter optimisation.

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