Johannes Gemmrich, University of Victoria, Victoria, BC

gemmrich@uvic.ca

Dynamical and statistical explanations of rogue wave occurrence rates

The media often present accounts of "rogue waves", though the meaning of the term is often left undefined. Technically, the term is reserved for those waves in the tail of the probability distribution. A common definition for rogue waves defines them as waves with height $H \geq 2.2\,H_s$, where the significant wave height H_s is the average of the one third highest waves.

Wave records are seldom long enough to establish reliable statistics for these infrequent events. Here, I use Monte-Carlo simulations to address some open questions that arise in the analysis of wave data and the assessment of rogue wave occurrences. These simulations shed light onto the dynamical processes involved in the generation of rogue waves. Furthermore, the use of extreme value theory in fitting exceedance probabilities, and thus as a potential forecast tool for rogue wave occurrence rates, will be discussed.