



## **Reproduction in Wave Tanks of Extreme Waves at Sea using Time Reversal Principle**

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We present experimental results on the reproduction in wave basin of rogue waves measured at sea using the time reversal (TR) methodology. The generation and accurate control of target free surface profiles in a uni-directional wave tank is challenging, especially when waves become highly non-linear, which is the case for rogue waves that are known to be very steep.

The TR method, making use of the time reversibility of the wave propagation phenomenon, leads to a simple experimental procedure, which accuracy is investigated in this study.

Three different wave profiles referred as rogue waves in the literature are tested (including the well known New Year Wave). This allows to test different extreme waves' characteristics. The accuracy of the TR method is demonstrated with varying steepnesses and propagating distances. The method is also demonstrated as very robust, even in the presence of unavoidable wave breaking, known as an irreversible process.