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Rogue waves in crossing seas: the Louis Majesty accident

L. Cavaleri (1), L. Bertotti (2), L. Torrisi (3), E. M. Bitner-Gregersen (4), M. Serio (5), and M. Onorato (6)

(1) Institute of Marine Sciences, ISMAR-CNR, Venice, Italy, luigi.cavaleri@ve.ismar.cnr.it, (2) Institute of Marine Sciences, ISMAR-CNR, Venice, Italy, luciana.bertotti@ve.ismar.cnr.it, (3) CNMCA, National Meteorological Service, Rome, Italy, lucio.torrisi@ecmwf.int, (4) Det Norske Veritas, Veritasveien 1, NO-1322 Høvik, Norway, elzbieta.bitner-gregersen@dnv.com, (5) Dipartimento di Fisica Generale, Universit'a di Torino, 10125 Torino, Italy, mario.serio@gmail.com, (6) Dipartimento di Fisica Generale, Universit'a di Torino, 10125 Torino, Italy, miguel.onorato@gmail.com

We analyze the sea state conditions during which the accident of the cruise ship Louis Majesty took place. The ship was hit by a large wave that destroyed some windows at deck number five and caused two fatalities. Using the WAM model, driven by the COSMO-ME winds, we perform a detailed hindcast of the local wave conditions. The results reveal the presence of two comparable wave systems characterized almost
by the same frequency. We discuss such sea state condition in the framework of a system of two coupled Nonlinear Schr¨odinger, CNLS, equations, each of which describing the dynamics of a single spectral peak. For some specific parameters, we discuss the breather solutions of the CNLS equations and estimate the maximum wave amplitude. Even though,due to the lack of measurements, it is impossible to establish the nature of the wave that caused the accident, we show that the angle between the two wave systems during theaccident is close to the condition for which the maximum amplitude of the breather solution
is observed.