

Pure Loss of Stability: 2nd generation intact stability



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Abstract:

One of the most important elements in ship design is the transverse intact stability. Ships compulsorily comply the 2008 IS code ensuring the safety of ship based on the ship stability assessment in calm water. When ship encounters harsh weather conditions it is exposed to large variations of stability in waves. Extremely steep waves in following seas along with small ship stability due to large reduction of the righting lever in a wave crest at amidship location can lead to sudden capsizes of ship. This phenomenon occurs due ship's dynamic instabilities in longitudinal waves and termed as pure loss of stability. This paper presents the sample calculations of ship's vulnerability to such phenomenon, based on in-house developed computer program. Numerical algorithm to calculate the ship stability in waves and still water which has been developed is discussed elaborately. The calculations concerning the assessment of the vulnerability to Level-1 and Level-2 criteria of pure loss of stability of a cargo ship has been explained using IMO/SDC WP.2 procedure.