Evaluating the Parameter Influence in the Event of a Ship Collision Based on the Finite Element Approach

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Abstrak

The main objective of this paper is to review and examine the effects of the selected collision parameter values on the characteristics of collision energy in several ship collision scenarios. The benchmarking particulars were taken from the ship-to-ship collision case on Sunda Strait in 2014, while the collision process was modeled with non-linear simulations using the finite element (FE) method to determine the predicted damage and internal energy in the collision process. In the first phase, the verified model for the numerical simulation was built based on the benchmarks and other previous findings by researchers. The study of parameters during the collision process was performed in a later stage. The location of the target point in the vertical axis and the effect of the collision angle were the primary main focuses. The characteristics of damage and energy tendencies will be presented. One remarkable findings was that the structure of the car deck showed a better resistance and was more difficult to destroy than the other proposed locations. The angle position between the two objects during the impact process significantly contributed to the damage pattern on the side hull. The final results also indicated that the cross-section of the target point?s location influenced the observed parameters.