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TOP > Available Volumes > Table of Contents > Abstract

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Influence of the Body Shape and the Trapped-air on the water impact problem

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Summary: In this paper, the influence of the body surface and trapped air on the water impact problem is discussed. It is assumed that the water surface can be expressed by a subsequence of circular hollows, and that the body surface can do the triangular prism, or circular cylinder. Under this assumption, the influence of the body surface and trapped air for the water impact problem is investigated in the case that the dropped speed is constant. Results show that the maximum value of the trapped air pressure becomes larger and larger and the period of that is shorter and shorter, as the steepness of the body surface increases, and that the impact force could be large because of the trapped air, even if the steepness of the body surface increases. Also, we find that the impact force becomes smaller and smaller as the steepness of the water surface increases, whether the air trapping happens or not.

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