

Numerical Study of Massive Tsunami Impacts by Stabilized FEM

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It is important to estimate the effects of massive tsunamis inundation and impulse forces by differences between arrangements, shapes and number of buildings. The numerical study based on the FEM or FVM using the unstructured mesh is an efficient for these investigations.

This paper presents a numerical study of building impacts by tsunami propagation and inundation. In order to estimate the forces obtained by the velocity and the tsunami height and the inundation depth, the Stabilized Finite Element Method of which the basic equation was the shallow water equation was applied. For the numerical example, several tsunami propagation and inundation analyses were carried out in order to estimate the effects of buildings by inundation and impulse forces. From these investigations, it can be concluded that present study is a significant to estimate the vulnerability of buildings with respect to the massive tsunami risks.

Keywords: Tsunami propagation and inundation, Impulse force, Stabilized FEM, Massive tsunami risks