

WAVE HEIGHT DISTRIBUTION FOR SPILLING WAVES IN THE SURF ZONE

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Among the wave characteristics affecting coastal sediment transport that include the wave height, the wave period and the breaking wave direction, the wave height is a critical factor in determining the amount of sediment transport in the coastal area, which is much more intense under breaking waves than under non-breaking waves. Breaking waves exhibit various patterns, principally depending on the incident wave steepness and on the beach slope. Based on the equations of conservation of mass, momentum and energy, a theoretical model for wave deformation in and outside the surf zone is obtained, for calculating the wave shoaling, wave set-up and set-down and wave height distributions in and outside the surf zone. An analysis and comparison has been given about the breaking point location and the wave height decay caused by the wave breaking and the bottom friction. Flume experiments relating to the spilling wave height distribution across the surf zone, in which advanced wave maker, data sampling devices and data processing system are utilized in the flume experiments with a slope covered by sands with different diameters, to facilitate the observation and research on the wave transformation and breaking, are conducted to verify the theoretical model, and the agreement between the theoretical and experimental results are well, which are shown in Fig. 1

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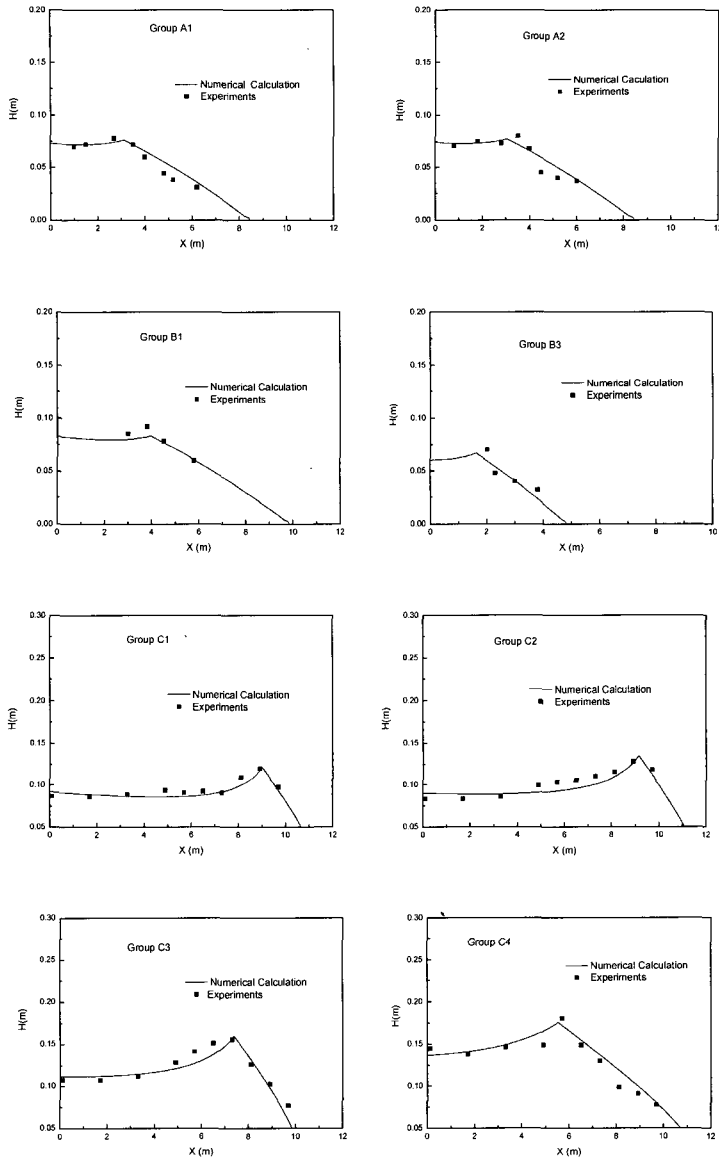


Fig. 1 Wave height distributions in and outside the surf zone