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Extreme Waves Interaction with Construction of a Mixed Profile

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The results are presented of experimental and numerical study of extreme periodic waves interaction with protective structure of complex profile. The construction to study is a combination of underwater ledge and a rubble mound sloping wall on it, which ends on a vertical wall. Experimental investigations were produced at the hydro flume with shield wavemaker. Experimental pressure diagrams were obtained along the underwater ledge and the wave run-up values on the vertical wall. There were determined the reduction coefficient and other characteristics of wave interaction with the structure from experimental data. Also numerical studies were performed using models based on linear and nonlinear theories of wave propagation on the water. We analyzed the results and fulfilled the detailed comparison of experimental and numerical data. The relevance of the presented study is justified by the absence of engineering methods for designing of such kind of mixed profile structures.