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Investigation of the Effect of Wave Height, Period and Spectrum on the Layout of Breakwaters (Case Study: Brizak Port)

Breakwaters are among the most expensive structures in port infrastructure and therefore the optimal design of their layout to form a port basin is very important. Nowadays, in most engineering activities, the BW (Boussinesq Wave) module of the Mike21 software package is used to study and analyze the tranquillity of the port basin or to achieve the wave diffraction pattern inside the port basin. This study aims to investigate the sensitivity of the diffraction coefficients obtained from the BW model to the height, period, and type of spectrum of the incident wave. For this purpose, Brizak port has been selected for the case study and in several numerical models, the height, period and type of input wave spectrum in a specified range have been changed. In each of the models, the diffraction coefficients in a specific location are extracted and the trend of its changes is investigated. According to the results, increasing the wave period increases the diffraction coefficients in the basin while increasing the wave height reduces the diffraction coefficient.

Keywords: Breakwater, Basin Calmness, Boussinesq Wave, Diffraction Coefficient, Port Infrastructure

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