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Abstrak

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The water-wave interaction with submerged breakwaters is examined to determine the reflection and transmission coefficients. Three types of breakwaters are considered, namely, a submerged breakwater extending from the sea bed until below the waterline, a breakwater extending from above the seawater to some distance below, and a breakwater extending all the way from the seabed with slit at some distance from the bed. In all three cases the breakwaters are assumed to be rigid, thin, and impermeable, and subjected to linear monochromatic waves, and the fluid motion is idealized as linearized, two-dimensional potential flow. A computationally efficient method - an eigenfunction technique with a mixed boundary condition - is used to determine the velocity potential anywhere in the region of flow. The least-square method has been utilized in the solution for the mixed boundary condition. The accuracy of the solution is demonstrated by comparing the numerical values for the transmission coefficient with those obtained from experiments or other analytical solutions but with water depth restrictions. Numerical results in terms of both reflection and transmission coefficients are presented for each case.