Some topics on wave interaction with coastal structures: experiment and numerical modeling

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Coastal structures such as breakwaters and seawalls, are frequently constructed along the coast to reflect/dissipate wave energy for protecting the shoreline and preserving local economic activity. Understanding the wave-structure interactions is essential for many engineering applications, especially those related to extremely long waves.

In this talk, I will mainly give what we have done on the topics of wave-structure interactions. This presentation will focus on the experimental observations and numerical modeling of solitary wave interaction with coastal structures. While the kinematics of solitary waves over a mild sloping beach is presented for large-scale experiment, the dynamics of solitary wave interactions with coastal seawall and thin-barrier are shown for small-scale experiments. Further, numerical modeling will be introduced on the perspective of model applicability. Finally, some ongoing recent research topics are presented.