



Nonlinear runup resonance in a finite bay of variable parabolic cross-section

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During the recent years, several interesting studies published on the non-linear runup of Tsunamis and other incident waves in channels and bays. Most of these studies use Riemann invariants to tackle the nonlinearities associated with both the incident and reflected phases. However, all of these studies assume that the waves get generated within the bay (essentially assuming bays extending into infinity), rather than considering a wave that has been generated in the open sea. Such waves would be reflected not just by the shoreline but also by the bay mouth. This is a setting where a resonance can be induced within the bay. We investigate this problem nonlinearly with a modal approach.