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ABSTRACT

The effect of boundary conditions on the numerical simulations is one of the important aspects for the truncated soil domain in soil structure interaction problems. In fact, soil is a nonlinear medium and modelling the boundary conditions has to consider the nonlinear behaviour to resemble the wave propagation in nonlinear media. In this study, Local Absorbing Boundary Conditions for the wave propagation in nonlinear media (NLABC) are presented.

The efficiency of the proposed methods has been verified for both 1D and 2D wave propagation problems using explicit solver and the accuracy is compared with extended meshed models. The study concluded that better responses can be obtained by using the proposed approach when compared with traditional Local Absorbing Boundary Conditions. It is also inferred that the proposed method inherently considered the relaxation due to plastic deformation beyond the numerical domain boundary.

Keywords: Absorbing Boundary Conditions, Soil-Structure Interaction, Wave Propagation velocities, Nonlinear material