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خلاصه مقاله:

Abstract In this study, we present an analytical model developed to describe broadband inhomogeneous wave propagation in an unsaturated visco-poroelastic layered medium which can applied in geomechanics issues as hydrocarbon reservoirs. By taking into account the effect of the tortuosity parameter on the movement of pore fluids, the proposed formulation is capable of describing the wave behavior at high as well as mid and low frequencies. The boundary conditions proposed in this study, account for the connection between the surface pores, along with the slip that occurs between the two media at their interface. This enables us to model the layered medium in a more realistic way, where, the pore fluids are able to pass through the layers and the layers are able to move relative to each other. Finally, a sensitivity analysis is carried out and the effect of the various parameters on wave propagation inside the layered medium is observed.

کلمات کلیدی:

Keywords: Reflection, refraction, Wave propagation, Porous materials, unsaturated soil, boundary conditions