TAGIR FARKHUTDINOV, University of Alberta
Variational Methods in the Dynamics of Porous Media

We use the variational approach to derive the equations of motion of compressible homogeneous elastic porous media filled with an incompressible non-viscous fluid. The total energy density equation is computed in the form of conservation law. The linearization of the system of equations is found and investigated to confirm the stability of wave propagation. Phase and group velocities of $s-$ and $p-$ waves and corresponding attenuation coefficients are computed numerically for a number of non-dimensional parameter sets. We compared our linearized system with the equations of porous mechanics from Biot's 1962 paper and found a partial correspondence of our parameters with Biot's phenomenological coefficients.