

Chen, J.

Time domain fundamental solution to Biot's complete equations of dynamic poroelasticity. II: Three-dimensional solution. (English) [Zbl 0816.73001](#)
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Summary: To complete the fundamental solutions for Biot's theory of dynamic poroelasticity, this paper is dedicated to the three-dimensional case. The solutions in the Laplace transform domain are presented, and the Green's functions for elastodynamics and steady-state poroelasticity are easily recovered as the special cases of the present solutions. Both the transient solutions for the limiting case and for the general case have been derived. Lastly, the variations with time of the solid displacements and fluid pressure components for the point loads after the arrival of the waves are studied graphically, the ensuing transient Green's function components are compared with Laplace transform domain solutions and are found to be in excellent agreement, except for the limiting case at later times as have been expected.

MSC:

- [74E05](#) Inhomogeneity in solid mechanics
- [76S05](#) Flows in porous media; filtration; seepage
- [74S15](#) Boundary element methods applied to problems in solid mechanics
- [44A10](#) Laplace transform

Cited in **21** Documents

Keywords:

[Green's functions for elastodynamics](#); [steady-state poroelasticity](#); [transient solutions](#); [fluid pressure](#)

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