# Thermal Consolidation of a Poroelastic Full Space Subjected to a Decaying Point Heat Source

呂志宗,林鳳彩
Civil Engineering & Engineering Informatics
Engineering
cclu@chu.edu.tw

## Abstract

This paper presents the axial symmetrical thermal consolidation caused by a decaying point heat source in a saturated isotropic poroelastic full space. The formulations of the mathematical model are based on Biot's non-isothermal three-dimensional consolidation theory of porous media. The closed-form solutions of displacements, excess pore water pressure and temperature increment of the porous stratum are obtained by using Laplace and Hankel integral transforms. The solutions may be used to test numerical models and numerical simulations of the thermoelastic processes near the decaying heat sources.

Keyword：Decaying Heat Source, Thermal Consolidation, Closed-form Solution, Full Space