

1125-35-2915

Sedar Ngoma* (nzb0015@auburn.edu), 221 Parker Hall, Auburn, AL 36849, **Dmitry Glotov**, 221 Parker Hall, Auburn, AL 36849, **A. J. Meir**, 209 D Clements Hall, Dallas, TX 75275, and **Willis E. Hames**, 210 Petrie Hall, Auburn, AL 36849. *Recovering a time-dependent diffusion coefficient in a parabolic PDE with applications in geochronology.*

We consider a problem arising in geochronology, a branch of geology in which the dating of rock formations and geological events is studied. In particular, we investigate the reconstruction of temperature histories of rocks, that amounts to solving a time-dependent inverse diffusion coefficient problem with an integral overspecification. Using the Banach fixed point theorem, we show the existence and uniqueness of classical solutions. We describe a numerical scheme used to approximate the solutions of the inverse problem by means of a finite element discretization for space and the backward implicit Euler method in time. Numerical experiments illustrate the accuracy and efficiency of the proposed scheme. (Received September 20, 2016)