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Sedar Ngoma* (nzb0015@auburn.edu), Department of Mathematics and Statistics, 221 Parker Hall, Auburn, AL 36849, and **Dmitry Glotov, Willis E. Hames** and **A. J Meir**. *On a parabolic inverse source problem arising in geochronology.*

We investigate a problem arising in geochronology, the study of dating of rock formations and geological events, and in particular the reconstruction of temperature histories of rocks, and dating the cooling of rocks through exhumation. Reconstructing the temperature history amounts to solving a time-dependent, inverse source problem for an integral constrained PDE. Using Rothe's method and an energy argument, we show the existence and uniqueness of weak solutions. We describe a numerical scheme which can be used to approximate solutions of the inverse problem. Numerical experiments illustrate the accuracy and efficiency of the proposed method. (Received September 23, 2015)