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Sedar Ngoma* (ngoma@geneseo.edu), SUNY Geneseo, 1 college Circle, 323 South Hall, Geneseo, NY 14454. *A fixed point method for a time-dependent inverse diffusion coefficient problem for a parabolic partial differential equation.*

We investigate an inverse diffusion coefficient problem for a parabolic partial differential equation with an integral constraint. We establish the existence and uniqueness of solutions using fixed point theory. We develop and implement an algorithm to approximate solutions of the inverse problem by means of the finite element method in space and the implicit Euler method in time. We calculate the error and report the rates of convergence which we estimate by the linear regression. These rates are consistent with the standard parabolic error estimates. The numerical results we present show the accuracy of our scheme. (Received February 19, 2018)