1145-35-2192 **Sedar Ngoma*** (ngoma@geneseo.edu), Department of Mathematics, South Hall 323, 1 College Circle, Geneseo, NY 14454. *On an inverse source problem for a parabolic equation with an integral constraint.*

We investigate an inverse source problem with a Neumann boundary condition and subject to an integral overdetermination for a parabolic partial differential equation. The unknown source function depends on time only. Thanks to a certain transformation, we derive the existence, uniqueness, and continuous dependence of solutions in Hölder spaces. The proof of the existence and uniqueness of solutions yields an algorithm that we used to approximate solutions of the inverse problem by means of a finite element discretization. Due to instability in inverse problems, we employ the Tikhonov regularization and report the error. Our results show that the proposed scheme is an accurate way for approximating solutions of this inverse problem. (Received September 25, 2018)