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Identification of time dependent control parameter through finite difference method in parabolic partial differential equation.

Inverse problems are the oldest most important problems in science and engineering. Because of their applications in medical imaging, underground prospecting, nondestructive testing, astronomical imaging, image processing, remote sensing, and data mining, Business, Industry, and Government (BIG) sectors are very interested in computational inverse problems. Because of massive increase in computing power and development of powerful numerical techniques, the field of inverse problems has undergone rapid development recently. In this work, we consider a parabolic partial differential equation with time dependent control parameter. Forward Time Central Space, Backward Time Central Space, and Crank-Nicolson method are used to identify the control parameter. Numerical experiments are presented and the stability of the solution is discussed. (Received September 05, 2016)