

1067-35-114

Narayan Thapa* (narayan.thapa@minotstateu.edu), Department of Mathematics and CS,
Minot State University, Minot, ND 58707. *Parameter Estimation for Damped Sine-Gordon
Equation with Neumann Boundary Condition.*

In this thesis we study an identification problem for physical parameters associated with damped sine-Gordon equation with Neumann boundary conditions. The existence, uniqueness, and continuous dependence of weak solution of sine-Gordon equations are established. The method of transposition is used to prove the Gâteaux differentiability of the solution map. The Gâteaux differential of the solution map is characterized. The optimal parameters are established. Fréchet differentiability of the cost functional J is established. Computational algorithm and numerical results are presented. (Received July 24, 2010)