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Narayan Thapa* (narayan.thapa@minotstateu.edu). *Fréchet Differentiability of Parabolic Partial Differential Equation.*

The second order parabolic partial differential equation with a diffusion coefficient is considered. Continuity of solution map with respect to parameter is shown. The necessary condition for the optimal set of parameter by minimizing the objective functional is established. Weak Gateaux differentiability of solution map is established. Fréchet differentiability of functional is derived. (Received September 06, 2014)