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Mikheil Tutberidze* (mikheil.tutberidze@iliauni.edu.ge), 3/5 Kakutsa Cholokashvili ave.,
0162 Tbilisi, Rep of Georgia. *On the Numerical Solution of One Nonlinear Parabolic Equation.*

The author constructs the difference scheme for initial-boundary value problem to following Nonlinear Parabolic partial differential equation

$$\frac{\partial U}{\partial t} = a(x, t, U) \frac{\partial^2 U}{\partial x^2} + b(x, t, U) \left(\frac{\partial U}{\partial x} \right)^2 + f(x, t).$$

The coefficients $a(x, t, U)$ and $b(x, t, U)$ are to satisfy the condition $a(x, t, U) > L |b(x, t, U)|$ for some positive constant L and for each U . For the mentioned difference scheme the theorem of existence of the solution and the theorem of convergence of the solution of difference scheme to the solution of the source problem are proved. The rate of convergence is established and is equal to $O(\tau + h^2)$. (Received September 04, 2011)