

962-45-1378

**Colleen M Kirk\*** ([kirkc@mail.montclair.edu](mailto:kirkc@mail.montclair.edu)), Upper Montclair, NJ 07009, and **Catherine A Roberts** ([catherine.roberts@nau.edu](mailto:catherine.roberts@nau.edu)), Flagstaff, AZ 86011. *A Quenching Problem for the Heat Equation.*

A Nonlinear partial differential equation of parabolic type is investigated for quenching behavior. Quenching occurs when the solution of the equation remains bounded while the first order time derivative becomes unbounded in finite time. We examine a quenching problem for the heat equation in a one-dimensional strip of finite width with special nonlinear boundary conditions. Specifically, the boundary condition at one end represents nonlinear absorption of heat and the boundary condition at the other end represents nonlinear heat loss. The interactions between the diffusion, the heat behavior at the boundaries and the length of the domain are studied to determine conditions under which the phenomenon of quenching will or will not occur. (Received October 03, 2000)