

1106-35-2486

Zhaosheng Feng* (zsfeng@utpa.edu), Department of Mathematics, University of Texas—Pan American, Edinburg, TX 78539. *Degenerate parabolic system and its approximate solutions.*

In this talk, we are concerned with approximate solutions to a degenerate parabolic system. We provide a connection between the Abel equation of the first kind, an ordinary differential equation that is cubic in the unknown function, and the degenerate parabolic system, a partial differential equation that is the dispersion model of biological populations with both density-dependent diffusion and nonlinear rate of growth. We present the integral forms of the Abel equation with the initial condition. By virtue of the integral forms and the Banach Contraction Mapping Principle we derive the asymptotic expansion of bounded solutions in the Banach space, and use the asymptotic formula to construct approximate solutions to the degenerate parabolic system. (Received September 16, 2014)