Nonlinear oscillations in a unijunction transistor (UJT) circuit
JOHN ZIELINSKI, MARK KOEPKE, West Virginia University — Phenomena such as plasma waves[1] and oscillations in electric circuits which employ a plasma component[2] can be described by a differential equation with nonlinear dissipative and restoring force terms. The UJT oscillator circuit developed by Koepke and Hartley[3] is also described by a similar equation. During the past year efforts have been made to understand the following aspects of this circuit's operation: 1) Determining conditions which lead to oscillation onset and termination (amplitude collapse). 2) Analytic and numerical modeling. 3) Characterizing the capacitances associated with the emitter-base junctions. 4) Exploring the relationship between this circuit and astable multivibrators.

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John Zielinski
West Virginia University

Date submitted: 26 Jul 2005   Electronic form version 1.4