1086-34-280 **Ronald E Mickens*** (rmickens@cau.edu), Clark Atlanta University, Atlanta, GA 30314, and **Tre Wells** (tre-wells@yayoo.com), Morehouse College, Atlanta, GA 30314. *Damping/Dissipative Forces having Finite-Time Dynamics.*

In the mathematical modeling of mechanical systems, the damping and/or dissipative forces are generally represented as linear combinations of the velocity raised to positive integer values. (The velocity is taken as first derivative, with respect to time, of the dependent variable.) A major issue with such functional forms is that the associated system amplitude(s) go to zero only after an infinite time interval. However, this is not what is observed for actual systems. Using an explicit example, we show that there exists damping/dissipative forces for which the system dynamics ends in a finite time after the initial motion begins. We also discuss general functional forms for damping/dissipative forces and how they may be applied to the oscillations of carbon nano-tubes and graphene sheets. (Received August 15, 2012)