1107-37-98 **Aminur Rahman*** (ar276@njit.edu), 323 Martin Luther KIng Jr.Blvd, Department of Mathematical Sciences, Culimore Hall, Newark, NJ 07102. *Discrete Model and Mechanical Analog of the n-Bounce Resonance of Solitary Waves.*

The n-bounce resonance and chaotic scattering in solitary wave collisions is presented. In these phenomena, the speed at which a wave exits a collision depends in a complicated fractal way on its input speed. The method of collective-coordinate ordinary differential equations is a useful tool in simplifying partial differential equation models. These ODE models are further reduced to discrete-time iterated separatrix maps and from this it is possible to obtain new quantitative results unraveling the fractal structure of the scattering behavior. Furthermore, from the collective-coordinates model a mechanical analog is derived for which an experiment is constructed. (Received January 05, 2015)