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Manas Bhatnagar* (manasb@iastate.edu), 209 N Hyland Ave, Unit 4, Ames, IA 50014, and
Hailiang Liu. *Critical thresholds in one dimensional damped Euler-Poisson systems.*

The talk will be about critical threshold phenomenon in one dimensional damped, pressureless Euler-Poisson equations with electric force induced by a constant background, originally studied in [S. Engelberg and H. Liu and E. Tadmor, Indiana Univ. Math. J., 50:109–157, 2001]. Using a simple transformation to linearize the characteristic system of equations allows us to study the geometrical structure of critical threshold curves for three damping cases: overdamped, underdamped and borderline damped through phase plane analysis. We will also see the explicit form of these critical curves. These sharp results state that if the initial data is within the threshold region, the solution will remain smooth for all time, otherwise it will have a finite time breakdown. At the end, we will see an application of these general results to identify critical thresholds for a non-local system subjected to initial data on the whole line. (Received September 05, 2019)