1109-76-299 **Babak Shotorban*** (bs0002@uah.edu), University of Alabama in Huntsville, Huntsville, Alabama 35899. *An Eulerian Model for Particles Nonisothermally Carried by a Compressible Fluid.* Preliminary report.

An Eulerian model describing the transport of particles that nonisothermally interact with their carrying flow is developed in the general time-dependent, three-dimensional frame. The Eulerian model derives from the Lagrangian kinematic, momentum and energy particle equations based on a combination of the filtered Liouville equation and the method of moments. The filtered Liouville equation governs the filtered density function of the particle velocities and temperature in phase space. The equations are closed by expressing third order moments in terms of lower order moments based on the assumption that third-order correlations are negligible. The particle transport equations are two-way coupled with the inviscid, Euler equations governing compressible flows. Consistent with the hyperbolic conservation form of the Eulerian–Eulerian model, a flux-vector splitting and characteristics-based Roe averaging method discretizes the equations. Computations of a cloud of particles initially at rest in a uniform, subsonic flow and in an accelerated flow behind a normal shock in one dimension, show very good comparison with a recent higher order WENO based Eulerian–Lagrangian model. (Received February 03, 2015)