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Alexander Panchenko* (panchenko@math.wsu.edu). *Deconvolution closure for spatially averaged dynamics of particle systems*. Preliminary report.

The main question addressed in the talk is how to obtain closed form continuum equations governing spatially averaged dynamics of many-particle systems. The underlying particle dynamics is modeled by the classical Newton ODEs. The starting point is the system of the balance equations derived by Noll, Hardy, Murdoch and others. The missing ingredient in these works is closure: the equations are exact but calculation of fluxes requires solving the underlying ODE system. To produce continuum equations that can be simulated without resolving particle dynamics, we developed a closure method based on the use of regularized deconvolutions. We also present results of numerical experiments showing good agreement between the closed form flux approximations and their exact counterparts. (Received August 23, 2011)