1087-65-222 **Dmitry Kurochkin*** (dkurochk@tulane.edu), 6823 St. Charles Ave, New Orleans, LA 70118, and **Alexander Kurganov** (kurganov@tulane.edu), 6823 St. Charles Ave, New Orleans, LA 70118. *Metropolis-Hastings Algorithm for Control Problems Constrained by Systems of Hyperbolic PDEs.*

Control problems constrained by systems of conservation or balance laws are considered. The problem is equivalent to minimizing an objective functional subject to the system of the hyperbolic PDEs. A local minimum of the functional can be achieved using a gradient method by solving numerically the system of the PDEs forward and then the corresponding adjoint system backward in time. In order to obtain the global minimum, a Markov Chain Monte Carlo (MCMC) method, based on the Metropolis-Hastings algorithm, is applied prior to the gradient method. Being a convergent algorithm, the MCMC method is, however, might be very slow and even practically useless due to the extremely high dimensionality of the constrained optimization problem. In this work, we study efficient choice of the proposal distributions including a proper (stochastic) clustering of the control parameters. The algorithm was applied to one-dimensional system of Euler Equations of ideal gas dynamics. (Received December 04, 2012)