1106-91-1097 **Kristina B Hilton*** (khilton@mail.usf.edu), Department of Mathematics and Statistics, University of South Florida, 4202 East Fowler Avenue, Tampa, FL 33620-5700, and **Gangaram S Ladde** (gladde@usf.edu), Department of Mathematics and Statistics, University of South Florida, 4202 East Fowler Avenue, Tampa, FL 33620-5700. *Collective Behavior of Multi-Cultural Social Networks Under Stochastic Structural Perturbations.* Preliminary report.

Using Lyapunov type functions in combination with comparison methods, we explore the cohesion and invariance among subgroups of a dynamic multi-cultural social network under internal and external random environmental perturbations. In doing so, we look to better understand the behavior of members of various subgroups and how environmental and structural influences may cause a transition from one subgroup to another subgroup of the network as well as the degree to which a subgroup is susceptible to infiltration by other members of the network. The presented work is centered around the decomposition of state domain of dynamic of the cultural community. We characterize the magnitudes of both the intra- and inter- relative cultural affinities with respect to the presented decomposition. We outline a specific illustration that serves to establish the framework in which explicit sufficient conditions for the state decomposition are given in terms of the system parameters. The developed conditions are utilized to describe the asymptotic behavior of self-invariant and conditionally invariant sets and its interpretations. (Received September 10, 2014)