1067-92-774   **Michael A Buice*** (`buicem@niddk.nih.gov`), NIH/NIDDK/LBM, Bldg 12A, Rm 4007, Bethesda, MD 20892, and **Carson C Chow** (`carsonc@niddk.nih.gov`), NIH/NIDDK/LBM, Bldg 12A, Room 4007, Bethesda, MD 20892. *Heterogeneity and Stability in globally coupled neural networks.*

We investigate the effects of heterogeneity on the population statistics and the stability of neural networks. Our model system is a set of quadratic integrate-and-fire neurons coupled through a global activity variable. We demonstrate the conditions for stability of this system and show how the level of heterogeneity effects these conditions. We discuss the impact of heterogeneity on the possibility of various coding schemes in the network, for example whether the neurons respect a phase-coding versus a rate-coding mechanism. In addition, we demonstrate how to derive an effective activity equation (an expression for the dynamics of the global coupling variable which accounts for the phase relationships of the neurons) and discuss its relation to coding. (Received September 14, 2010)