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**Joseph A Rhoads\*** (joseph.rhoads@gmail.com), **Richard Bertram**, **Joel Tabak**, **Michael Mascagni** and **Gordon Erlebacher**. *Biological Neuronal Networks on Nvidia Cuda Graphics Processors*. Preliminary report.

Biological neuronal networks with thousands of neurons create systems with hundreds of thousands of equations that need to be updated at every time step. The structure of the system of ordinary differential equations that govern the cell dynamics lends itself to data parallel programming with CUDA. We are able to run neuron systems with thousands of cells in parallel on the GPU at a fraction of the time required for serial simulations on a workstation. (Received September 22, 2009)