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Charles Bergeron* (chbergeron@gmail.com), Albany College of Pharmacy, and Health Sciences, 106 New Scotland Ave, Albany, NY 12208, and **Thomas R. Kiehl**. *Extracting connectivity patterns from neural spikes*. Preliminary report.

We are interested in the quantitative characterization of neuronal network development in cell cultures. We view this basic science as a necessary advancement towards improving regenerative therapies for neurological conditions. Our data comes from electrophysiological recordings of cell cultures grown on multielectrode arrays (glass plates embedded with 60 electrodes that can detect electrical activity). Presumably, by treating each culture as a weighted directed 60-node graph, we can infer how the tissue is interconnected, describe changes over time, assess the effect of other variables (cell density, presence of electrical stimulation, disease factors, application of pharmacological agents), and connect patterns to meaningful biological insights. However, our preliminary investigations have found that this inference is difficult to make. In tonic firing phase, the culture is in overdrive making it difficult to assess burst propagation through the network. In resting or quiescent phase, too few spikes are often detected, making it difficult once again to seize network properties. In this talk, we discuss our approach to this conundrum. (Received September 16, 2014)