1154-92-270 **Paulina Volosov*** (volosp@rpi.edu) and **Gregor Kovacic**. *Linking Functional and Structural Neuronal Network Connectivity using Incomplete Observation Data and Leveraging the Spectral Properties to Characterize Network Structure.*

The extent of the relation between architectural and functional connectivity in the cerebral cortex is a question which has attracted much attention in recent years. Neuroscientists frequently use the functional connectivity of neurons, i.e. the measures of causality or correlations between the neuronal activities of certain parts of a network, to infer the architectural connectivity of the network, which indicates the locations of underlying synaptic connections between neurons. Architectural connectivity can be used in the modeling of neuronal processing and in the forming of conjectures about the nature of the neural code.

We begin by reconstructing the entire network using time-delayed spike-train correlation, and we determine the time required before an adequate reconstruction becomes possible and compare this to time spans employed by experimentalists. To be more experimentally valid, we next examine a small "slice" or submatrix of the network and determine how much information we can deduce about the whole network from this small piece. Finally, we develop a metric using the spectrum of the adjacency matrix which enables us to classify small-world networks. (Received August 27, 2019)