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**Thomas J Emerson\*** (tj\_emerson@yahoo.com), Mountain View, CA 94041. *Cell Discovery in Networks with Transient Links*. Preliminary report.

A considerable amount of recent research has been devoted to the study of communities within networks, that is, sets of nodes which are highly interconnected but only sparsely connected to the rest of the network. It is typically assumed that the network is static - that is, the links between nodes are permanent, or at least that their duration is relatively long in comparison to the timescale of data collection. In this talk we present an algorithm for finding cells in networks defined by transient links, where by a cell we mean a set of nodes that have exhibited a temporally correlated pattern of link instantiation; in networks where the nodes represent agents which can instantiate links (e.g., computers in a local area network, or callers in a telephone system), the existence of a cell signifies dependence between the stochastic actions of the agents that comprise the cell. We illustrate the performance of the algorithm on a telephone call graph based on data collected from cell phone users in the MIT Media Lab's Reality Mining project. (Received March 03, 2009)