1135-65-1278 **David F Gleich*** (dgleich@purdue.edu) and **Austin Benson**. *Dynamical systems for tensor eigenvectors.* Preliminary report.

We describe a new family of algorithms that compute eigenvectors of a tensor by tracking the trajectory of a dynamical system. The algorithm arises from work that relates tensor eigenvectors to the stationary distributions of stochastic processes such as vertex reinforced random walks. This algorithm has good theory for probability tensors, where it can be shown to converge under some strong regularity conditions. In our empirical investigations, a generalization of this algorithm is able to find a wider range of eigenvectors of symmetric tensors compared with previous methods. (Received September 20, 2017)