1014-M1-61   **Thomas S Callaghan**, **Peter J Mucha** and **Mason A Porter*** (`mason@caltech.edu`), MC 114-36, California Institute of Technology, Sloan Annex 130, Pasadena, CA 91101. *How Well Can Random Walkers Rank Football Teams?*

We develop a one-parameter family of ranking systems based on a collection of voters, each with a single vote, executing independent random walks on a network defined by the teams (vertices) and the games played (edges). We study the statistical properties of the randomly walking voters, relating them to the structure of "communities" in the underlying network, and also briefly discuss generalizations of our algorithm. We examine the asymptotic behavior of our single-vote ranking algorithm, including some analytically tractable cases for round-robin tournaments. Finally, we compare results for recent NCAA Division I-A football seasons against the Bowl Championship Series standings. Despite its simple description at the level of individual, randomly-walking voters, we find this ranking system to be a reasonable way of selecting top teams. This work began as an undergraduate research project by Thomas Callaghan. (Received July 11, 2005)