1023-D1-1327 **Stephen Devlin*** (smdevlin@usfca.edu), Department of Mathematics, University of San Francisco, 2130 Fulton Street, San Francisco, CA 94121, and **Reza Dibadj** (rrdibadj@usfca.edu), School of Law, University of San Francisco, 2130 Fulton Street, San Francisco, CA 94121. *Generating Functions and the Prisoner's Dilemma on Graphs.*

The game theoretic prisoner's dilemma (PD) has been much studied as a metaphor for the emergence and evolution of cooperative behavior in social and biological systems. Much recent work has focused on role played by the underlying social topology as modeled by a graph where edges indicate social relationships between individuals (vertices). In this paper we use generating function techniques to give a mean field probabilistic model for a repeated PD game on a graph with specified degree distribution. We compare the model predictions with empirical simulations for various graphs of interest including those with scale free and Poisson degree distributions. (Received September 25, 2006)