1016-90-206 **Marina A Epelman*** (mepelman@umich.edu), Industrial and Operations Engineering, University of Michigan, 1205 Beal Ave., Ann Arbor, MI 48109, and **Archis Ghate** (archis@umich.edu) and **Robert L Smith** (rlsmith@umich.edu). *Sampled Fictitious Play algorithms for discrete optimization problems.* Preliminary report.

Sampled Fictitious Play (SFP) is a recently proposed technique for solving large-scale discrete optimization problems. We consider both traditional large-scale discrete problems, and problems modeling "complex systems" i.e., systems consisting of a large number of interacting components, which are increasingly modeled through computer simulations rather than traditional equation-based approaches, requiring significant computational effort to evaluate the objective function.

Our approach is motivated by the Fictitious Play paradigm from game theory and attempts to obtain near-optimal solutions to these problems. In my talk, I will describe several versions of the algorithm, discuss their theoretical convergence guarantees, and demonstrate their computational efficiency on various problems, with applications ranging from transportation and operations management, to general, "model-free, finite horizon, Markov decision problems. (Received February 13, 2006)