Abstract Submitted
for the MAR16 Meeting of
The American Physical Society

**Effects of long-range interactions in the one-dimensional Sznajd model** JOSEPH GARCIA, University of Maine, THOMAS STONE, Husson University, SUSAN MCKAY, University of Maine — The Sznajd model is a one-dimensional, binary, voter-like model used to study consensus in systems where information flows outward from like-minded agent pairs. Here, we introduce long-range interactions to the Sznajd model, quantified by the parameter p in analogy with the dynamic and static small-world rewiring parameter ($p \to 1$ is the mean-field limit, $p \to 0$ is the 1-D limit). We use Monte Carlo simulations and finite-size scaling analyses to characterize the exit probability for $p \neq 0$, finding a step function that depends on two p-dependent exponents. By examining the $p \to 0$ limit of these exponents, we comment on the functional form of the exit probability in one dimension, which has been an open question. We complement this limiting approach (letting $p \to 0$, which offers considerable computational speedup over the pure $p = 0$ case) by also simulating the $p = 0$ case via a parallel algorithm. This investigation also probes the dependence of consensus time and system magnetization on p.

Thomas Stone
Husson University

Date submitted: 03 Nov 2015 Electronic form version 1.4