Abstract Submitted
for the MAR08 Meeting of
The American Physical Society

**Triangle-3star-Correlations in the mean-field solution of equilibrium ensembles of undirected networks with 3-edge interactions** PETER FLECK, Center for Complex Systems Research, University of Illinois at Urbana-Champaign, NOSHIR CONTRACTOR, IEMS, Northwestern University — We study the equilibrium statistical mechanics of ensembles of undirected networks with triangle- and 3-star-type interaction among bi-valued edges. We discuss the analytical expressions for the statistics' averages in mean-field approximation as a function of these interaction parameters. We find these averages to be highly correlated for a large region of the parameter space. Quantifying these correlations we especially find triangle- and 3-star-motifs to correlate with one another. Markov Chain Monte Carlo simulations confirm the analytical mean-field results in an important part of parameter space. Implications for the analysis of network topologies are being discussed.

Peter Fleck
Center for Complex Systems Research, University of Illinois at Urbana-Champaign

Date submitted: 27 Nov 2007 Electronic form version 1.4