Abstract Submitted
for the MAR14 Meeting of
The American Physical Society

Topological properties of complex networks in protein structures[1]
KYUNGSIK KIM, Department of Physics, Pukyong National University, Busan 608-737, Korea, JAE-WON JUNG, Center for Atmospheric Science & Earthquake Research, Seoul 121-835, Korea, SEUNGSIK MIN, Department of Natural Sciences, Korea Naval Academy, Changwon 645-797, Korea — We study topological properties of networks in structural classification of proteins. We model the native-state protein structure as a network made of its constituent amino-acids and their interactions. We treat four structural classes of proteins composed predominantly of α helices and β sheets and consider several proteins from each of these classes whose sizes range from amino acids of the Protein Data Bank. Particularly, we simulate and analyze the network metrics such as the mean degree, the probability distribution of degree, the clustering coefficient, the characteristic path length, the local efficiency, and the cost.

[1]This work was supported by the KMAR and DP under Grant WISE project (153-3100-3133-302-350).

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Date submitted: 16 Nov 2013 Electronic form version 1.4