1033-57-232 **O. Ascigil**, **Y. Diao**, **C. Ernst**, **D. High** and **U. Ziegler*** (uta.ziegler@wku.edu), Department of Computer Science, Western Kentucky University, 1906 College Heights Blvd. 11076, Bowling Green, KY 42101-1076. *An Algorithm for Generating 4-regular Hamiltonian Plane Graphs.*

This presentation discusses an algorithm that randomly generates a special class of 4-regular plane graphs which are Hamiltonian. The algorithm generates graphs with n vertices and a fixed Hamiltonian cycle in $O(n)$. A modification of the algorithm, based on the exact count of the number of such graphs with n vertices and empirical data, randomly generates these graphs with near-uniform probability. Numerical evidence for this is presented. The motivation for these graphs comes from knot theory and the eventual goal is to generate large random knots without bias. (Received September 11, 2007)