Cycle Extendability in Graphs, Bigraphs and Digraphs

LeRoy B. Beasley, David E. Brown*, Brent Thomas, Utah State University

In 1990, Hendry conjectured that all chordal Hamiltonian graphs are cycle extendable, that is, the vertices of each non-Hamiltonian cycle are contained in a cycle of length one greater. In this talk, we discuss some preliminary results on a generalization of the concept of cycle-extendability to $S$-extendable; that is, with $S \subseteq \{1, 2, \ldots, n\}$ and $G$ a graph on $n$ vertices, $G$ is $S$-extendable if the vertices of every non-Hamiltonian cycle are contained in a cycle length $i$ greater, where $i \in S$. We present some results on tournaments, i.e., complete directed graphs, and some observations about cycle-extendability and $S$-extendability for non-directed graphs.

Keywords: Cycle extendability, tournaments, chordal graphs