Dissertation Defense

On Chorded Cycles

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Abstract: Historically, there have been many results concerning sufficient conditions for implying certain sets of cycles in graphs. My thesis aims to extend many of these well known results to similar results on sets of *chorded* (and sometimes even *doubly chorded*) cycles. In particular, we consider the minimum degree, $\delta(G)$ and a Ore-type degree sum condition, $\sigma_2(G)$ of a graph G, sufficient to guarantee the existence of k vertex disjoint chorded cycles, often containing specified elements of the graph, such as certain vertices or edges. Further, we extend a result on vertex disjoint cycles and chorded cycles to an analogous result on vertex disjoint cycles and *doubly* chorded cycles. We define a new graph property called chorded pancyclicity, and investigate a density condition and forbidden subgraphs in claw-free graphs that imply this new property. Specifically, we forbid certain paths and triangles with pendant paths. This is joint work with Dongqin Cheng, Ralph Faudree, Ron Gould, and Kazuhide Hirohata.

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