ON HAMILTONICITY OF $\mathcal{H}_4$-FREE DIGRAPHS

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In [1], Jørgen Bang-Jensen introduced four generalizations of bipartite tournaments, a digraph D is said to be an $\mathcal{H}_i$-free digraph if u and v are adjacent

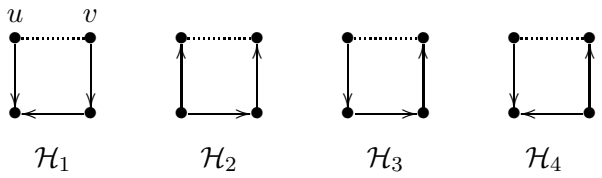

Figure 1: $\mathcal{H}_i$ digraphs

vertices whenever $\mathcal{H}_i$ appears in D. Obviously, all bipartite tournaments are $\mathcal{H}_i$-free digraphs for $i = 1$, 2, 3 and 4.

There is a nice characterization of Hamiltonian bipartite tournaments due to Gregory Gutin, Roland Häggkvist and Yannis Manoussakis, namely a bipartite tournament is Hamiltonian if and only if it is strong and contains a cycle factor.

Bang-Jensen conjectured in his paper that this result is true for $\mathcal{H}_i$-free digraphs, with $i = 1$, 2, 3 and 4. This conjecture was proved for $i = 1$ and 2 by Shiying Wang and Ruixia Wang and for $i = 3$ by Hortensia Galeana-Sánchez, Ilan A. Goldfeder and Isabel Urrutia.

In this talk, we shall sketch the proof for $i = 4$.

Keywords: Generalizations of tournaments, Hamiltonian digraphs, $\mathcal{H}_4$-free digraphs.

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References

[1] J. Bang-Jensen, The structure of strong arc-locally semicomplete digraphs, Discrete Math. 283 (2004) 1–6.