The Structure of Pfaffian Graphs

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Abstract. A graph G is Pfaffian if it has a skew adjacency matrix such that all the terms in the expansion of its Pfaffian are non-negative. Such property is useful, because it allows efficient computation of the number of perfect matchings of G. Characterizing Pfaffian graphs can be reduced to bricks (3-connected graphs G such that $G \setminus u \setminus v$ has a perfect matching for every two distinct vertices u, v of G). We discuss our recent theorem about brick generation and its application to the problem of characterizing Pfaffian graphs. This is joint work with Robin Thomas.