

# Perfect matchings and Hamilton cycles in the preferential attachment model

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In this talk we will discuss recent results concerning the existence of perfect matchings and Hamilton cycles in the preferential attachment model. This model was proposed by Barabási and Albert in 1999 to describe the growth of the World Wide Web, and it is one of the best-known models for complex networks. In the preferential attachment model, vertices are added to the graph one by one, and each time a new vertex is created it establishes a connection with  $m$  random vertices selected with probabilities proportional to their current degrees. We prove that if  $m \geq 1,260$ , then asymptotically almost surely there exists a perfect matching. Moreover, we show that there exists a Hamilton cycle asymptotically almost surely, provided that  $m \geq 29,500$ . (This is joint work with Alan Frieze, Paweł Prałat and Benjamin Reiniger.)