Edge-disjoint Hamilton cycles in graphs and digraphs

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A Hamilton decomposition of a graph or digraph G is a set of edge-disjoint Hamilton cycles which together contain all the edges of G. In 1968, Kelly conjectured that every regular tournament has a Hamilton decomposition. We recently proved an approximate version of this conjecture (joint work with Kühn and Treglown). I will also describe an asymptotic solution of a problem by Nash-Williams (from 1971) on the number of edge-disjoint Hamilton cycles in a graph with given minimum degree (joint work with Christofides and Kühn). Finally (in joint work with Knox and Kühn), we proved that for a large range of edge probabilities p, a random graph $G_{n,p}$ contains $\lfloor \delta(G_{n,p})/2 \rfloor$ edge-disjoint Hamilton cycles. This is clearly best possible and confirms a conjecture of Frieze and Krivelevich for such values of p.