Kelly's conjecture on Hamilton decompositions: a proof for large tournaments

Daniela Kühn
University of Birmingham

A long-standing conjecture of Kelly from 1968 states that every regular tournament has a decomposition into edge-disjoint Hamilton cycles. Here a regular tournament is an orientation of the complete graph where every vertex has the same in- and outdegree. Together with Deryk Osthus, I recently proved this conjecture for large tournaments. The proof introduces a new method which involves the notion of 'robustly decomposable' graphs. This method is quite general and has the potential for further applications. In my talk, I will give an informal sketch of the argument. I will also briefly discuss an application of our main result which solves a problem raised by Glover and Punnen as well as Alon, Gutin and Krivelevich on TSP tour domination.