A proof of a conjecture of Erdős et al. about subgraphs of minimum degree k

Lisa Sauermann
Stanford University

Abstract: Erdős, Faudree, Rousseau and Schelp observed the following fact for every fixed integer $k \geq 2$: Every graph on $n \geq k - 1$ vertices with at least $(k - 1)(n - k + 2) + (k - 2)(k - 3)/2$ edges contains a subgraph with minimum degree at least $k$. However, there are examples in which the whole graph is the only such subgraph. Erdos et al. conjectured that having just one more edge implies the existence of a subgraph on at most $(1 - \epsilon_k)n$ vertices with minimum degree at least $k$, where $\epsilon_k > 0$ depends only on $k$.
In this talk, we will sketch a proof of this conjecture. The proof relies on ideas from a paper of Mousset, Noever and Škorić. We will discuss these ideas and how they can be extended to give a proof of the full conjecture.

Monday, April 23, 2018, 4:00 pm
Mathematics and Science Center: W301