Rainbow connection and minimum degree

Ingo Schiermeyer, Technische Universität Bergakademie Freiberg, Germany

An edge-coloured graph $G$ is *rainbow connected* if any two vertices are connected by a path whose edges have distinct colours. The *rainbow connection number* of a connected graph $G$, denoted $rc(G)$, is the smallest number of colours that are needed in order to make $G$ rainbow connected. Krivelevich and Yuster have shown that a connected graph $G$ with $n$ vertices has $rc(G) < \frac{20n}{\delta(G)}$ ([M. Krivelevich and R. Yuster, The rainbow connection of a graph is (at most) reciprocal to its minimum degree, Journal of Graph Theory 63 (2010) 185-191](https://doi.org/10.1002/jgt.20515)]. In this talk we will show that a connected graph $G$ with $n$ vertices has $rc(G) < \frac{4n}{\delta(G)+1} + 4$.

Keywords: edge colouring, rainbow colouring, rainbow connected