

Stijn Cambie

KU Leuven

RESOLUTIONS OF #34 AND #35 IN THE GRAPH THEORY COLLECTION

In this talk, we give the main ingredients for the proof of two problems within Ramsey theory posed by Erdős, Faudree, Rousseau and Schelp, which are listed as problem 34 and 35 in the graph theory collection, and as problem 569 and 570 in the database erdosproblems.com.

For two graphs G and H , the Ramsey number $R(G, H)$ is defined as the smallest N such that in every red-blue colouring of the edges of the complete graph K_N , there is a red copy of G or a blue copy of H .

The result says that for every k and every graph H with m edges and no isolated vertices, $R(C_k, H) \leq (k-1)m + 1 \leq km$ and provided that m is sufficiently large with respect to k , $R(C_k, H) = 2m + \lfloor \frac{k-1}{2} \rfloor$. That is, we obtain both a general bound and exact asymptotic bound.

This is joint work with Andrea Freschi, Patryk Morawski, Kalina Petrova and Alexey Pokrovskiy.