

## On the chromatic number of $2K_2$ -free graphs

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In this talk we study the chromatic number of  $2K_2$ -free graphs. Our work was motivated by the following problem posed by Gyárfás.

**Problem:** What is the order of magnitude of the smallest  $\chi$ -binding function for  $\mathcal{G}(2K_2)$ ?

One of the earliest results is due to Wagon, who has considered graphs without induced matchings.

**Theorem** Let  $G$  be a  $2K_2$ -free graph with clique number  $\omega(G)$ . Then  $\chi(G) \leq \binom{\omega(G)+1}{2}$ .

In this talk we will show linear binding functions for several subclasses of  $(2K_2, H)$ -free graphs, where  $H \in \{C_4, \textit{Diamond}, \textit{House}, \textit{Gem}, \textit{Paw}\}$ . We will also present binding functions for  $(2K_2, \textit{Claw})$ -free graphs. Finally, we will discuss extensions of our results to subclasses of  $P_5$ -free graphs.

Keywords: Chromatic number,  $\chi$ -binding function, forbidden induced subgraph