

DIRAC-TYPE RESULTS FOR TILINGS AND COVERINGS IN ORDERED GRAPHS

ANDREA FRESCHI

A (*vertex*) *ordered graph* or *labelled graph* H on h vertices is a graph whose vertices have been labelled with $\{1, \dots, h\}$. In recent years there has been a significant effort to develop both Turán and Ramsey theories in the setting of vertex ordered graphs (see for example [1, 3, 4, 5]). Motivated by this line of research, Balogh, Li and Treglown [2] initiated the study of Dirac-type problems for ordered graphs. In particular, they focused on the problem of determining the minimum degree threshold for forcing a perfect H -tiling in an ordered graph for any fixed ordered graph H (recall that a perfect H -tiling in a graph G is a collection of vertex-disjoint copies of H covering all the vertices in G). In this talk we present a result which builds up on the ideas from [2] and fully resolve such problem. This provides an ordered graph analogue of the seminal tiling theorem of Kühn and Osthus [Combinatorica 2009]. We also determine the asymptotic minimum degree threshold for forcing an H -cover in an ordered graph (for any fixed ordered graph H).

This is joint work with Andrew Treglown.

REFERENCES

- [1] M. Balko, J. Cibulka, K. Král and J. Kynčl, Ramsey numbers of ordered graphs, *Electr. J. Combin.* **27** (2020), P1.16.
- [2] J. Balogh, L. Li and A. Treglown, Tilings in vertex ordered graphs, *J. Combin. Theory Ser. B* **155** (2022), 171–201.
- [3] D. Conlon, J. Fox, C. Lee and B. Sudakov, Ordered Ramsey numbers, *J. Combin. Theory Ser. B* **122** (2017), 353–383.
- [4] J. Pach and G. Tardos, Forbidden paths and cycles in ordered graphs and matrices, *Israel J. Math.* **155** (2006), 359–380.
- [5] G. Tardos, Extremal theory of vertex or edge ordered graphs, in *Surveys in Combinatorics 2019* (A. Lo, R. Mycroft, G. Perarnau and A. Treglown eds.), London Math. Soc. Lecture Notes 456, 221–236, Cambridge University Press, 2019.