Publicacions més rellevants de la línia de recerca:
Fonaments: geometria discreta i combinatòria, teoria de grafs i politops

Referència: García, A.; Huemer, C.; Hurtado, F.; Tejel, J.; Valtr, P. On triconnected and cubic plane graphs on given point sets. *Computational Geometry: Theory and Applications*, **42(9)** (2009), pp. 913–922.

Abstract: Given a set S of n points in general position in the plane, we provide a method for building a 3-connected crossing-free geometric graph on the vertex set S using the minimum possible number of edges. In particular, we prove that if n is an even number, there is a 3-regular, 3-connected crossing-free geometric graph on S, if and only if, the interior of the convex hull of S contains at least $n/2-1$ points. We also give similar results for sets of odd cardinality. Finally, we study when a 3-regular connected crossing-free geometric graph on S can be obtained.

Referència: Cáceres, J.; Hernando, C.; Mora, M.; Pelayo, I. M.; Puertas, M. L.; Seara, C.; Wood, D. R. On the metric dimensions of cartesian products of graphs. *SIAM Journal on Discrete Mathematics*, **21(2)** (2007), pp. 432–441.

Abstract: A set of vertices S *resolves* a graph G if every vertex is uniquely determined by its vector of distances to the vertices in S. The *metric dimension* of G is the minimum cardinality of a resolving set of G. This paper studies the metric dimension of cartesian products $G \square H$. We prove that the metric dimension of $G \square G$ is tied in a strong sense to the minimum order of a so-called doubly resolving set in G. Using bounds on the order of doubly resolving sets, we establish bounds on $G \square H$ for many examples of G and H. One of our main results is a family of graphs G with bounded metric dimension for which the metric dimension of $G \square G$ is unbounded.

Referència: Pfeifle, J. Dissections, Hom-complexes and the Cayley trick. *Journal of Combinatorial Theory, Ser. A*, **114** (2007), pp. 483–504.

Abstract: We show in this work that certain canonical realizations of the complexes $Hom(G, H)$ and $Hom_+(G, H)$ of (partial) graph homomorphisms studied by Babson and Kozlov are in fact instances of the polyhedral Cayley trick. For G a complete graph, we then characterize when a canonical projection of these complexes is itself again a complex, and exhibit several well-known objects that arise as cells or subcomplexes of such projected Hom-complexes: the dissections of a convex polygon into k-gons, Postnikov's generalized permutohedra, staircase triangulations, the complex dual to the lower faces of a cyclic polytope, and the graph of weak compositions of an integer into a fixed number of summands.