# AlCoLoBrain in Recolles

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Picture taken by Kaveh Khoshkhah.

**Participants:** L. Beaudou, F. Foucaud, S. Heydarshahi, G. Kahn, K. Khoshkhah, A. Lagoutte, F. Madelaine, A. Parreau, M. Pourmoradnasseri and M. Rosenfeld.

**Metric Dimension.** A set of vertices $R$ of a graph $G$ is a resolving set if the distance vectors from all vertices to $R$ are distinct. We try to bound the order of a graph $G$ knowing the size of a smallest resolving set $k$ and the diameter $D$. What can be said for series-parallel graphs or just 2-trees?

**Lines and metric spaces.** We prove that any bisplit graph has a universal line or at least $\Theta(n^{\frac{4}{3}})$ lines.

**Quantified core.** Discussion around whether or not Florent can go logic. More precisely, is there an analog for the notion of core in the framework of quantified homomorphisms.

**Homomorphisms of Relational Graph Patterns.** There is a finite time algorithm to decide whether there is a homomorphism between two RGPs.

**Packing linear orders of fixed size.** Comes from problem 23 in the notes from Barbados workshop (2018). How many linear orders of cardinality $k$ can be packed on a ground set so that no linear order of the groundset satisfies more than one of the small linear orders? Let $m(k)$ denote this maximal number. It is between $(k-1)!$ and $k!$. For small values of $k$, $m(2)$ is 1 and $m(3)$ is 4. We do not know the value of $m(4)$.

**Compact extended formulation** A better understanding of the transcription from dynamic programming to extended formulation (and so much more).