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Topical day: Mechanism Design and Computer Algebra. Galois Theory for Planar Mechanisms by Josef Schicho. 9:30-10h30. Amphitheater Darboux

mardi 24 octobre 2023 09:30 (1 heure)

Let G be a graph with n vertices and e edges. The computation of the position of n points in the plane such that for any two vertices in the graph connected by an edge, the distance between the two corresponding points is given, is equivalent to the inverse kinematic problem for a (highly parallel) planar mechanism with revolute joints. If the graph is a Laman graph, then the solution set is generically a finite set of orbits under the group of Euclidean displacements, and can be assigned a Galois group (which is associated to the field extension needed to express the solutions exactly). We explain some geometric ideas for analyzing the Galois group. Using these ideas, we determine the number of components of the solution set for graphs that have the property that the above position problem is generically solvable.