Séminaire d'algèbre, topologie et géométrie
Jeudi 16 juin à 14h
Salle I

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Abel-Ruffini theorem for systems of equations

The classical Abel-Ruffini theorem claims that the general polynomial equation of degree d is solvable in radicals iff d does not exceed 4. I will present an analogue of this theorem for systems of equations : the square system of general polynomial equations with the Newton polytope N is solvable in radicals iff it has at most 4 solutions, i.e. the integer volume of N is at most 4. This in particular allows to classify all solvable systems of polynomial equations.

The only known proof is based on recent strong results of toric geometry and finite group theory. The same question for a system of equations with non-equal Newton polytopes of equations is an open problem.