

Séminaire d'algèbre, topologie et géométrie

Jeudi 7 février à 14h

Salle I

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Vienne

Algebraic equations with smooth coefficients and applications

Take a monic polynomial in one variable of degree n whose coefficients are smooth complex-valued functions. The n roots (with multiplicities) of the polynomial constitute a multi-valued function, which admits smooth parameterizations locally near points, where all roots are distinct. But what happens at contact points of the roots? How regular can parameterizations of the roots be? These questions appear naturally in a wide array of mathematical problems, most notably in the perturbation theory for linear operators, the Cauchy problem for PDEs, smooth structures on singular spaces, or nodal sets of smooth functions. In this talk I will survey the recent developments in this subject. The focus will be on the optimal Sobolev regularity of the roots which solves a longstanding open problem. The talk is based on joint work with Adam Parusiński.