ALPEN-ADRIA UNIVERSITÄT KLAGENFURT

INVITATION TO THE DOCTORAL SEMINAR

Algebraic equations with smooth coefficients and applications

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Chaired by Barbara Kaltenbacher | Department of Mathematics

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ABSTRACT

Take a monic polynomial in one variable of degree n whose coefficients are smooth complex valued functions. By the fundamental theorem of algebra, there exist n functions which represent the roots. These functions are smooth locally near points where all roots are distinct, by the implicit function theorem. But what happens at contact points of the roots? How regular can these functions 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 Parusinski.

We hope to see you there!