



Coloquio Inst-Mat
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Degeneration in Algebraic Geometry.

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Abstract

Classical algebraic geometry is the study of sets of solutions of polynomials in \mathbb{C}^n . These are called complex varieties. In Grothendieck's modern formulation, we instead consider varieties inside R^n for *any* commutative ring R . This perspective not only unites complex geometry and number theory (for example, when R is a finite field) but also permits interaction between the two. The idea underpinning this interplay is degeneration: the modern formulation allows us to witness the movement of one variety into another.

In this talk we will survey the technique of degeneration, and focus on two celebrated examples, one arithmetic and the other geometric in nature. Each will highlight the rich interplay between complex geometry and number theory. Time permitting we will explain the technical results that allow us to transport geometric data between two nearby varieties in a family.

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