数学与系统科学研究院

计算数学所学术报告

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报告题目：

Intrinsic Properties and Invariant of Planar Algebraic Curves and Their Applications

邀请人： 徐国良研究员

报告时间： 2007 年 6 月 7 日(周四)

下午 4:00—5:00

报告地点： 科技综合楼三层311

计算数学所报告厅

Abstract:

Algebraic curve is an important research object and tool in many mathematical fields such as pure mathematics (algebraic geometry, transcendental numbers) and applied mathematics(interpolations and splines, CAGD, and approximation, etc.). The aim of this talk is to show an equivalence relation between the study of the intrinsic properties of planar algebraic curves and the study of singularity of bivariate spline spaces, and to investigate the absorbing properties of algebraic curves by means of spline approach. To study the intrinsic properties of algebraic curves in the projection plane, some definitions such as characteristic ratio of points on a line, characteristic mapping of point or line, and characteristic number of algebraic curve are proposed, and then an intrinsic invariant of any algebraic curve in a so called Pascal space is discovered by using the above concepts and the spline method. As another main result, the classical Pascal's theorem is generalized skillfully for the case of

algebraic curve of higher degree $n\geq 3$ in the Pascal spaces by recursive form. This extension is quite different from the generalizations to Pascal's theorem such as Chasles's Theorem and Cayley-Bacharach Theorem in algebraic geometry. Some examples to the Pascal's type theorem are given to interpret our results more clearly. Meanwhile, the singularity of the spline space over Morgan-Scott's type partition can be settled from our results by using the duality principle. Moreover, the results seem to be interesting to further study new applications in the projective geometry and the projective group

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