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Memorial Lecture on Shreeram Abhyankar

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Glimpses of Affine Algebraic Geometry following Shreeram Abhyankar

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Abstract: Algebraic Geometry is the study of varieties defined by polynomial equations. Such varieties are called Affine Varieties. The study naturally evolves into Geometry as well as Algebra. Often, important theorems are deduced by completing the affine varieties to projective varieties, or by local studies using completion at a point. It derives inspirations from Complex Analysis, Function Theory and Topology.

Abhyankar worked on all these different facets of Algebraic Geometry and produced important theorems and conjectures. We shall first give a brief overview of his work and then concentrate on questions of curves and surfaces in small dimensions. This involves the topics in Affine Geometry related to automorphisms and epimorphisms of polynomial rings. We shall start with the first significant theorem Abhyankar-Moh and Suzuki Epimorphism Theorem in two variables and discuss attempts at further extensions. Some discussion of the Jacobian Problem will naturally follow.