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Title: Geometric theory of complex Monge-Ampere equations

Abstract: Yau's celebrated solution to the Calabi conjecture reveals deep connections among nonlinear PDEs, differential geometry and algebraic geometry. Kolodziej further establishes the optimal analytic L^∞ estimate based on the integrability of the Monge-Ampere volume measure. I will discuss the recent development of the geometric estimates for complex Monge-Ampere equations and their applications in PDEs, Riemannian geometry and algebraic geometry.