

SCMS Seminar



ON SOME CLASSES OF NONLINEAR PARTIAL DIFFERENTIAL EQUATIONS AND RELATED GEOMETRIC PROBLEMS

Speaker: Dekai Zhang
Shanghai Center for Mathematical Sciences

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Venue: Room 102, Shanghai Center for Mathematical Sciences,
Jiangwan Campus, Fudan University

Abstract:

Lots of geometric problems can be reduced to the existence, uniqueness or regularity problem of nonlinear partial differential equations. For example, Yau confirmed the Calabi conjecture by solving the complex Monge-Ampere equation on compact Kahler manifolds. So it is very important to study those PDEs arising from geometric problems. In the first part, I will talk about the Neumann problem of some fully nonlinear partial differential equations. One of the motivation is related to the higher order Yamabe problem on manifolds with boundary in conformal geometry. In the second part, I want to talk about classification problems of shrinking Ricci solitons. Ricci solitons are natural generalizations of Einstein manifolds and self-similar solutions of the Ricci flow. More importantly, the blow-ups around Type-I singularity point of a Ricci flow converge to nontrivial gradient shrinking Ricci solitons.