Harnack inequalities and W-entropy formula for Witten Laplacian on Riemannian manifolds with K-super Perelman Ricci flow

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Time **Friday, January 9, 2015 at 11:00**
Place **Campus Kirchberg, room B02**

In this talk, we prove logarithmic Sobolev inequalities and Li-Yau or Hamilton type differential Harnack inequalities for the heat equation of the Witten Laplacian on Riemannian manifolds equipped with K-super Perelman Ricci flow. Moreover, we establish the W-entropy formula and prove a rigidity theorem on complete Riemannian manifolds satisfying the $\mathrm{CD}(K, m)$ condition for $K \in \mathbb{R}$ and $m \in [n, \infty)$. Finally, we extend the W-entropy formula to time dependent Witten Laplacian on compact Riemannian manifolds with K-super Perelman Ricci flow.

Joint work with Songzi Li (Fudan University and University Paul Sabatier).