

Geometric Flows and Einstein Manifolds

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The purpose of this special section is to describe recent advances in Geometric Flows methods and some applications to the search of Einstein Manifolds. The famous Hamilton's Ricci Flow has been the key tool in Perelman's proof of Thurston's Geometrization conjecture. In dimension 3 there are still quite a few open problems, in particular related to the topology and geometry of open manifolds. The structure of those manifolds admitting a metric (with bounded geometry) of uniformly positive scalar curvature (i.e. scalar curvature bounded below away from 0) has been recently completely described. However the case when the scalar curvature is just positive is still open.

In different directions the mean curvature flow as well as the inverse mean curvature flow provide good geometric insights; indeed, the inverse mean curvature flow starting from a star-shaped domain in a simply connected negatively curved manifold realises a sweep-out that in some instances (symmetric spaces) gives information related to the structure at infinity.

These tools could be used to produce generalised Einstein manifolds such as Ricci solitons and mean curvature flow solitons which occur naturally in the study of singularities of geometric flows.

Confirmed Speakers

Alix Deruelle (Sorbonne Universit , Paris)

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