

A scalar Calabi-type flow in Hermitian geometry: short-time existence and stability

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Abstract. We introduce a new geometric flow of Hermitian metrics which evolves an initial metric along the second derivative of the Chern scalar curvature. The flow depends on the choice of a background metric, it always reduces to a scalar equation and preserves some special classes of Hermitian structures, such as balanced and Gauduchon metrics. We show that the flow has always a unique short-time solution and we provide a stability result when the background metric is Kähler with constant scalar curvature (cscK). The main theorem is obtained by proving a general result about stability of parabolic flows on Riemannian manifolds which is interesting in its own right and in particular implies the stability of the classical Calabi flow near cscK metrics.

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