

## Abstract

This thesis is focused on the study of curvature properties of balanced and SKT metrics.

More in details, as regards balanced metrics, we use gluing techniques to show that the blow-up of a compact Chern-Ricci flat orbifold at a finite number of smooth points admits constant Chern scalar curvature balanced metrics, even obtaining a control on the balanced class of the constructed metrics.

In the case of SKT metrics, we proceed in a systematic study of the generalized Ricci flow with symmetries, adapting the bracket flow technique by Lauret in the context of generalized Geometry. This allows us to prove long-time existence of the homogeneous generalized Ricci flow on any solvmanifold. Using then the equivalence between said flow and the pluriclosed flow, we are able to deduce long-time existence of the pluriclosed flow on any SKT solvmanifold.

Finally, we focus our attention on hyperHermitian Geometry. In this setting, we prove an incompatibility result between strong HKT metrics and balanced hyperHermitian ones, providing an evidence of the validity of the Fino-Vezzoni conjecture in the hyperHermitian setting.