

Essential parabolic structures and their infinitesimal automorphisms

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Using the theory of Weyl structures, we give a natural generalization of the notion of essential conformal structures and conformal Killing fields to arbitrary parabolic geometries. We show that a parabolic structure is inessential whenever the automorphism group acts properly on the base space. As a corollary of the generalized Ferrand-Obata Theorem proved by C. Frances, this proves a generalization of the "Lichnerowicz Conjecture" for conformal Riemannian, strictly pseudo-convex CR, and quaternionic/octonionic contact manifolds in positive-definite signature. For an infinitesimal automorphism with a singularity, we give a generalization of the dictionary introduced by Frances for conformal Killing fields, which characterizes (locally) essential singularities via their holonomy.

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