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Polyhomogeneity of metrics compatible with a Lie structure at infinity along the Ricci flow

Along the Ricci flow, we study the polyhomogeneity of complete Riemannian metrics endowed with "a Lie structure fibred at infinity", that is, a class of Lie structures at infinity that induce in a precise way a fibre bundle structure on a certain compactification by a manifold with corners. When the compactification is a manifold with boundary, this class of metrics contains, in particular, the b-metrics of Melrose, the fibred boundary metrics of Melrose and Mazzeo and the edge metrics of Mazzeo. Our main result consists in showing that the polyhomogeneity of the metrics compatible with a Lie structure fibred at infinity is locally preserved by the Ricci-DeTurck flow. If the initial metric is asymptotically Einstein, the polyhomogeneity of the metrics solutions is obtained as long as the flow exists. Moreover, if the initial metric is "smooth up to the boundary", then it will be also preserved by the normalized Ricci flow and the Ricci-DeTurck flow.