

SOME METRIC-LIKE TENSORS FOR PSEUDO(SEMI)GROUPS

TARO ASUKE

This is a work in progress.

Associated with (regular) foliations, holonomy pseudogroups are defined. If foliations are transversely holomorphic, then the pseudogroups are holomorphic, namely, they consist of local holomorphic diffeomorphisms which act on a complex manifold (which are possibly disconnected). Similarly, if holomorphic semigroups which act on closed manifolds are given, then we can associate holomorphic pseudosemigroups with them. Let us work on foliations of complex codimension one, or semigroups which act on one-dimensional complex manifolds (which are also possibly disconnected). Then, we can define a Fatou–Julia decomposition of pseudo(semi)groups in a way such that it is compatible with the usual ones: decompositions into the domains of discontinuity and the limit sets, and those into the classical Fatou sets and the Julia sets. It is known that the Fatou sets of foliations admit metrics invariant under holonomies, while those of (pseudo)semigroups admit semi-invariant (decreasing under holonomies) ones. Although they are only shown to be effective on Fatou sets, it seems that there are possibilities to make them use on Julia sets. Indeed, simple observations show that we can tell from the singularity of the map $z \mapsto \frac{z}{z+1}$ from the one of the map $z \mapsto e^{\sqrt{-1}\alpha}z$, where $\alpha \in \mathbb{R}$, using some metric-like tensors. I will mainly talk about foliations (pseudogroups). If there remains time, I will also talk about (pseudo)semigroups.

GRADUATE SCHOOL OF MATHEMATICAL SCIENCES, UNIVERSITY OF TOKYO, 3-8-1 KOMABA, MEGURO-KU, TOKYO 153-8914, JAPAN

Email address: asuke@ms.u-tokyo.ac.jp

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