

DEFORMATIONS OF FREE MORPHISMS ALONG FOLIATIONS

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ABSTRACT

A foliation \mathcal{F} on a projective manifold X induces natural foliations on the space of morphisms of any given projective manifold Y to X . In general this rather dull, as the induced foliation is nothing but the foliation by points. When this foliation is non-trivial one expects that it must reflect properties of the original foliation \mathcal{F} and should be an useful tool to unravel its geometry.

In this series lectures I plan to discuss the particular case of space of free morphisms from \mathbb{P}^1 to X . The focus will be on codimension one foliations, and I will show how to apply these ideas to describe the structure of codimension one foliations with trivial canonical bundle on rationally connected manifolds following [2].

TENTATIVE PLAN

First lecture. Basic properties of foliations. Transverse structures for codimension one foliations. The foliation on the space of morphisms.

Second lecture. Zariski closure of leaves of the foliation on the space of morphisms versus existence of transverse structure.

Third lecture. Structure of foliations with trivial canonical bundle.

REFERENCES

- [1] D. CERVEAU, A. LINS-NETO, F. LORAY, J. V. PEREIRA, F. TOUZET, *Complex codimension one singular foliations and Godbillon-Vey sequences*. Mosc. Math. J. **7** (2007), no. 1, 2154, 166.
- [2] F. LORAY, J. V. PEREIRA, F. TOUZET, *Singular foliations with trivial canonical class*. arXiv:1107.1538v3.
- [3] F. TOUZET, *Feuilletages holomorphes de codimension un dont la classe canonique est triviale*. Ann. Sci. Éc. Norm. Supér. (4) **41** (2008), no. 4, 655–668.

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