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Nagoya Math. J.
Vol. 151 (1998), 209–220

PRE-WEIGHTED HOMOGENEOUS MAP GERMS FINITE DETERMINACY AND TOPOLOGICAL TRIVIALITY

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Abstract. In this paper we introduce the notion of G-pre-weighted homogeneous map germ, (G is one of Mather's groups $\mathcal{A}$ or $\mathcal{K}$) and show that any G-pre-weighted homogeneous map germ is G-finitely determined. We also give an explicit "order", based on the Newton polyhedron of a pre-weighted homogeneous germ of function, such that the topological structure is preserved after perturbations by terms of higher order.

The characterization of finite determinacy of map germs and of topological triviality of families of map germs are fundamental subjects in singularity theory.

An analytic map germ $g: K^n, 0 \to K^p, 0$, ($K = \mathbb{R}$ or $\mathbb{C}$), is G-semi-weighted homogeneous, (G is one of the Mather's groups $\mathcal{A}$ or $\mathcal{K}$), if it can be decomposed in a form $g = f + k$, where f is weighted homogeneous, G-finitely determined and k is a map germ with weighted filtration higher than the weighted degree of f.

It is well known that any G-semi-weighted homogeneous map germ g is G-finite and that any deformation of g by terms with weighted degree higher than the weighted degree of f is topologically trivial (see [3]).

In this article we shall investigate map germs $g: K^n, 0 \to K^p, 0$ which can be decomposed in a form $g = f + h$, where f is weighted homogeneous, G-finitely determined and $h = (h_1, h_2, \ldots, h_p)$ is a polynomial map germ such that any monomial h_{ij} of h_i has weighted degree lower than the weighted degree of f_i.

Looking for the properties of semi-weighted homogeneous map germs, we ask the questions:

1. If a map germ g can be decomposed in a form $g = f + h$ as above, is g G-finitely determined?

Received May 31, 1996.
[1]Financial support from CNPq, process #300556/92-6