

On the topology of the Newton boundary II

(generic weighted homogeneous singularity)

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(Received April 10, 1978)

(Revised Oct. 23, 1978)

0. Introduction.

Since E. Brieskorn found exotic spheres as a neighborhood variety of an isolated singularity of a hypersurface defined by a certain type of polynomial, various remarkable results have been obtained by many mathematicians. ([2], [12], [10], [11], [1], [3], [5], [18] etc.) However most of them treat only isolated singularities of hypersurfaces and few results are known about the topology of non-isolated singularities. For example, if an analytic function $f(z_1, \dots, z_{n+1})$ has an isolated critical point at the origin, the local Milnor fiber is $(n-1)$ -connected by Milnor [10] and a fair amount of information can be obtained from the Milnor number ($=n$ -th Betti number of the Milnor fiber). But if f has a non-isolated critical point at the origin, the connectivity of the fiber goes down so that we have no general method to determine the respective Betti numbers or even the Euler-Poincaré characteristic of the fiber.

In this paper we study the topology of the singularity of a weighted homogeneous polynomial which has a non-degenerate Newton boundary. Our main theorem is a kind of generalization of the above connectivity theorem of Milnor. This paper is a continuation of [16] and it consists of the following sections.

1. Notations and main results.
2. Fundamental groups and monodromy maps.
3. Lifting principle.
4. A special case of Theorem (1.1).
5. Topology of a globally non-degenerate polynomial.
6. Proof of (ii) of Theorem (5.3).
7. Topology of F .

* The author is partially supported by Sakkokai Foundation.