Homology submanifolds and homology classes of a homology manifold

By

Masahisa ADACHI

This note is concerned with the problem of the realisation of homology classes of a homology manifold by homology submanifolds. First the C^∞-case of this problem was studied by R. Thom [6]. Next the PL-case and TOP-case were studied in [1], [2], [3].

The present study is founded on the Williamson's transversality theorem [7]. We shall apply R. Thom's method [6] to homology manifolds.

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1. Statement of the results

We shall obtain the following results:

Theorem 1. *Let V^n be a homology manifold of dimension n ($n \geq 2$). For $1 \leq k \leq n/2$, all homology classes of $H_k(V^n, \mathbf{Z}_2)$ can be realized by homology submanifolds which have normal PL-microbundles.*

Theorem 2. *Let V^n be a homology manifold of dimension n ($n \geq 2$). All homology classes of $H_{n-1}(V^n, \mathbf{Z}_2)$ can be realized by homology submanifolds which have normal PL-microbundles.*

These results are quite in parallel with those of PL-case in [2].