ICM 1998, Berlin, Aug. 18–27

Abstracts of Short Communications and Posters

Section:

6. Topology

1991 MS Classification: 57N35
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Representing homology classes of 4-manifolds

Theorem 1 If W is a compact, simply connected, PL 4-manifold, then each element of $H_2(W)$ can be represented by a compact PL submanifold $M \subset W$ such that M consists of a Mazur-like contractible 4-manifold with a single 2-handle attached.

A compact contractible PL 4-manifold is *Mazur-like* if it has a handle decomposition in which there is one 0-handle, no handles of index greater than 2, and the attaching map for the ith 2-handle is homotopic to the loop represented by the ith 1-handle.

Theorem 2 If W is a compact, simply connected, PL submanifold of S^4, then each element of $H_2(W)$ can be represented by a locally flat topological embedding of S^2.

It should be noted that both Theorems 1 and 2 are false without the hypothesis that W is compact.