Interactions of Low-dimensional Topology and Quantum Field Theory



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Homology manifolds and their Spivak normal fibration

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I propose to present a construction of a Poincare duality space with the two properties: 1) its Spivak normal fibration does not admit a Top-reduction (equivalently, there is no degree one normal map from a topological closed manifold) and 2) its (periodic) total surgery obstruction vanishes. This contradicts the validity of two theorems in the literature, the one stating that PD complexes with trivial periodic tso are homotopy equivalent to homology manifolds, and the other saying that the Spivak normal fibration of a homology manifold admits a Top-reduction. Joint with Hebestreit, Winges, and Weiss.

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