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„On characteristic classes of exotic manifold bundles.“

Abstract:

Restricting diffeomorphisms of a closed n -manifold M to an embedded disc D^n induces a fibration sequence $\text{Diff}(M, D^n) \rightarrow \text{Diff}(M) \rightarrow \text{Emb}(D^n, M)$, where $\text{Emb}(D^n, M)$ is the space of embeddings of the disc and $\text{Diff}(M, D^n)$ the group of diffeomorphisms fixing it. Connected summing M with an exotic sphere S does not affect the homotopy type of the two outer terms in the sequence, so one might expect it to be hard to detect the possible exotic nature of $M \# S$ by means of homotopical properties of its group of diffeomorphisms. Combining computations in stable homotopy theory with recent advances in manifold theory by Galatius and Randal-Williams, I will present results on the behavior of the cohomology of $\text{BDiff}(M)$ when taking the connected sum with an exotic sphere.