

Singular fibers of manifold pairs

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This is a joint work with Osamu Saeki. In this paper, we first classify singular fibers of C^∞ stable maps of manifold pairs (M, N) into surfaces. Then, we compute the cohomology groups of the associated universal complex of singular fibers, and obtain certain cobordism invariants for Morse functions on manifold pairs (M', N') , where M' is a closed surface and N' is a closed 1-dimensional submanifold of M' . We also give the 2-colored versions of all these results, when the submanifold separates the ambient manifold into two parts.