FUNDAMENTAL THEOREMS OF MANIFOLD CALCULUS VIA LOCALIZATION

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Manifold calculus is a technique to study homotopical properties of presheaves on manifolds by decomposing them into "Taylor towers." In the late 90s, Weiss proved two fundamental theorems of manifold calculus for space-valued presheaves, concerning the existence of Taylor towers and the classification of homogeneous functors [Wei99]. While it is desirable to have a version of these theorems for presheaves with values in arbitrary categories, Weiss's argument was specific to spaces and did not seem to admit such a generalization. Fast forward a few decades, there was a significant advancement in the framework of homotopy-coherent mathematics, namely the introduction of ∞-categories. In this talk, we approach the fundamental theorems of manifold calculus via the theory of localizations of ∞-categories [MG19, Ara23, AF15]. We will see that not only does this prove the fundamental theorems for arbitrary targets, but it also leads to a more conceptual proof of the theorems.

This talk is based on [Ara24].

References

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