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„Top(d) and orthogonal calculus“

Abstract:

A central role in the study of manifolds and their automorphisms is played by the homotopy type of the topological group $\text{Top}(d)$ of homeomorphisms of d -dimensional Euclidean space, which is known to be closely related to algebraic K- and L-theory and, as discovered more recently, to operad theory and the study of graph complexes à la Kontsevich.

The various pieces of information about $\text{Top}(d)$ that are currently known can be packaged in terms of Weiss' orthogonal calculus, which is a general machinery to study functors on the category of real inner product spaces. This perspective does not only neatly clarify all that is known about $\text{Top}(d)$ so far, but it also suggests a number of tempting tasks one could set oneself for the future study of $\text{Top}(d)$.

My plan for this talk is to give a gentle introduction to orthogonal calculus with a view towards $\text{Top}(d)$, followed by explaining aspects of recent joint work with O. Randal-Williams.