
ROBIN KOYTCHEFF, University of Louisiana at Lafayette

The Taylor tower for the space of knots and finite-type knot invariants

I will discuss the Taylor tower for the space of long 1-dimensional knots in Euclidean space, which comes from Goodwillie-Weiss functor calculus. When the codimension is at least 3, this tower converges to the space of knots, while in the classical case of codimension 2, all real-valued finite-type invariants factor through it. With Budney, Conant, and Sinha, we constructed a homotopy-commutative multiplication on each stage of the tower compatible with stacking long knots via the evaluation map. This helped us provide evidence for a conjecture that all abelian-group-valued finite-type invariants factor through the tower. Topics of ongoing and planned joint work include actions of the cactus operad and splicing operad on the tower, as well as computations in the homotopy spectral sequence of the tower.