

String topology and self-intersections

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String topology studies the algebraic structure of the homology of the free loop space of a manifold. I'll describe joint work with Nathalie Wahl about string topology operations, and about what these operations compute. We have simplified, chain-level definitions for the “loop” or “string” product and coproduct. The new definitions make possible new links between geometry and loop products. For example, if the k -fold coproduct of a homology class X on LM is nontrivial, then every representative of X contains a loop with a $(k+1)$ -fold self-intersection.

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