Operads and extensons of reflexive homology

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An oriented group is a discrete group G with a homomorphism from G to the cyclic group of order two. Koam and Pirashvili studied cohomology theories for oriented algebras, i.e. associative algebras equipped with an action of the oriented group G (where elements of G act via (anti)-automorphisms, depending on their image in the cyclic group of order two). I will describe an extension of their theory using the framework of functor (co)homology and crossed simplicial groups, viewing it as an extension of reflexive homology (which is a homology theory for algebras with an anti-involution). We will demonstrate how this framework allows us to identify these homology theories as "homotopical objects", i.e. as the homology of algebras over an operad. As a special case, we can describe reflexive homology as operadic homology. This is all joint work with Dan Graves and Sarah Whitehouse.