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*Algebraic Factorization of Chain Algebra Morphisms*

The algebraic factorization systems of Riehl provide for functorial solutions to the lifting problem in a given model category. Using a modified small objects argument, Riehl showed that any model category satisfying mild hypotheses has such a system. We will provide explicit constructions, using reasonably elementary techniques, of algebraic factorization systems for the category of chain (i.e. differential graded) algebras.

Our construction requires the use of strong homotopy morphisms in a fundamental way. Furthermore, we will discuss how our construc- tions may be carried out for algebras and coalgebras over an arbitrary Koszul operad/cooperad pair.

This is joint work with Kathryn Hess (EPFL) and Paul-Eugène Parent (U Ottawa).