1043-55-146 **Jonathan Scott*** (j.a.scott@csuohio.edu), Cleveland State University, Department of Mathematics, 2121 Euclid Avenue, RT 1515, Cleveland, OH 44115-2214. *Operads, co-rings, and homotopy morphisms.*

The idea of morphisms that preserve algebraic structure up to strong homotopy goes back to the work of Sugawara in the 1960s and Halperin-Stasheff and Gugenheim-Munkholm in the 1970s, who considered strongly homotopy-multiplicative maps between topological groups and associative algebras, respectively.

In considering more complicated algebraic structures, one is led to the study of operads. We show how co-rings over an operad allow one to change the hom-sets between algebras, via Kleisli categories. In particular, the Koszul resolution of a quadratic operad is a co-ring that turns out to control morphisms up to strong homotopy between algebras over that operad.

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