RIGHT ADJOINTS TO OPERADIC RESTRICTION FUNCTORS

GABRIEL C. DRUMMOND-COLE AND PHILIP HACKNEY

Abstract. If $f : P \to Q$ is a morphism of operads, then there is a restriction functor from $Q$ algebras to $P$ algebras. This restriction functor generally admits a left adjoint. This restriction may or may not admit a right adjoint: if $G \to H$ is a group homomorphism, then the forgetful functor from $H$-sets to $G$-sets has a right adjoint, while there is no right adjoint to the functor from commutative algebras to associative algebras.

In this talk, we provide a concise necessary and sufficient condition for the existence of a right adjoint to the restriction functor, phrased in terms of the operad map $f$. We give a simple formula for this right adjoint, and examine the criterion in special cases. All of this is applicable over quite general ground categories. (Joint work with Gabriel C. Drummond-Cole)

Center for Geometry and Physics, Institute for Basic Science (IBS), Pohang 37673, Republic of Korea
Email address: gabriel@ibs.re.kr

Department of Mathematics, University of Louisiana at Lafayette, Lafayette, LA, United States of America
Email address: philip@phck.net