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Bruce R Corrigan-Salter* (brucecor@buffalo.edu), 244 Mathematics Building, Buffalo, NY 14260. *Rigidification of homotopy algebras over multi-sorted semi-theories*. Preliminary report.

Multi-sorted algebraic theories provide a formalism for describing various structures on spaces that are of interest in homotopy theory. The results of Badzioch and Bergner showed that an interesting feature of this formalism is the following rigidification property. Every multi-sorted algebraic theory defines a category of homotopy algebras, i.e. a category of spaces equipped with certain structure that is to some extent homotopy invariant. Each such homotopy algebra can be replaced by a weakly equivalent strict algebra which is a purely algebraic structure on a space. The equivalence between the homotopy categories of loop spaces and topological groups is a special instance of this result.

In this talk we will introduce the notion of a multi-sorted semi-theory which is a useful generalization of a multi-sorted algebraic theory. We will show that in the setting of multi-sorted semi-theories we can still obtain results paralleling these of Badzioch and Bergner, although a rigidification of a homotopy algebra over a multi-sorted semi-theory is given by a strict algebra over a certain resolution of that semi-theory. This extends the result obtained by Badzioch for single-sorted semi-theories. (Received September 20, 2012)