

Meeting: 1005, Newark, Delaware, SS 1A, Special Session on Homotopy Theory (in Honor of Donald M. Davis's and Martin Bendersky's 60th Birthdays)

1005-55-81 **Simona Paoli*** (spaoli@buffalo.edu), Department of Mathematics, SUNY at Buffalo, 244 Mathematics Building, Buffalo, NY 14260-2900, and **Steve Lack** (s.lack@uws.edu.au), School of Mathematical Sciences, University of Western Sydney, Locked Bag 1797, NSW 1797 Penrith South, Australia. *An operadic approach to internal structures in homotopical algebra.*

Certain problems in homotopy theory, such as the algebraic modelling of homotopy types, require the use of simple higher categorical structures. These also have applications in homological algebra, combinatorial group theory, topological quantum field theory. In this talk we consider these structures in the context of T-algebras, where T is an operad on a symmetric monoidal category. We show how to obtain an operadic description of these structures. The main case of interest is when the operad is on an abelian category, and the structures in question are those of internal category, internal n-category, internal n-tuple category. This allows an operadic treatment of crossed modules and other crossed structures. These results have potential applications to Quillen cohomology theories. (Received January 30, 2005)