1033-55-116 **Wojciech Dorabiala*** (`wud2@psu.edu`), Department of Mathematics, Penn State Altoona, 3000 Ivyside Park, Altoona, PA , and **Bernard Badzioch**. *Categorical algebra of mapping spaces.*

One of the successes of algebraic structures was a description of the structure of n-fold loop spaces, that is spaces of maps from an n-dimensional sphere S^n to a given space X. A remarkable feature of this description is that one can decide if a space Y is of the homotopy type of an n-fold loop space just by looking at a certain algebraic structure on Y. The talk will give an overview of these results. It will also explain how the algebraic formalism involved can be extended to mapping spaces other than loop spaces and why - at least in some cases - algebraic structure is not enough to describe the structure of the mapping spaces. (Received September 07, 2007)