1147-55-776   **Kristine Bauer*** (`bauerk@ucalgary.ca`), 612 Campus Place N.W., University of Calgary, 2500 University Drive NW, Calgary, AB T3G 0C9, Canada. *Functor calculus and differential category theory.* Preliminary report.

Since the 1990's, the calculus of functors has been used in a variety of settings to better understand invariants of spaces, spectra, simplicial algebras, or other homotopical objects. Functor calculus provides a tower of approximating polynomial functors in the same way that finite stages of the Taylor series provide polynomial approximations of a function. Over roughly the same period of time, category theorists have understood differentiation in a variety of settings as an axiomatic construction. In joint work with B. Johnson, C. Osborne, E. Riehl and A. Tebbe, we showed that for functors of abelian categories, the functor calculus notion of differentiation is an instance of the categorical notion of differentiation. One could then ask whether or not other types of functor calculus also lead to examples of categorical differentiation. In this talk, I'll report on progress towards understanding functors of spaces in this light. This is joint work with M. Burke and M. Ching. (Received January 28, 2019)