1123-55-396   **Charles Rezk*** (`rezk@illinois.edu`), Department of Mathematics, 273 Altgeld Hall, MC-382, 1409 W. Green Street, Urbana, IL 61801. *On some approximations to homotopy theory.*

Homotopy theory arose as the study of continuous maps between spaces up to continuous deformation. It has surprisingly been found to be an essential concept in many new developments in algebra and geometry, under the guise of higher categories. However, the classical problems in topology remain. Many basic questions are difficult if not intractable: for instance, the problem of computing higher homotopy groups of spheres.

A better approach is to describe certain approximations to classical homotopy. One highly successful example is the "rational homotopy theory" of Quillen and Sullivan, which gives an effective method for computing homotopy groups modulo torsion; or equvialently, after inverting primes. There is a generalization of this point of view, called "chromatic homotopy theory" where instead of inverting primes, we invert classes of maps called "v_n-self maps". I'll give an introduction to some of these ideas, and explain some recent work (joint with Mark Behrens) which provides a chromatic analogue of some rational homotopy constructions. (Received August 30, 2016)