Topology Seminar

John Harper

of University of Western Ontario will be speaking on

Quillen homology completion and strong convergence of the

on July 19 at 4:30 in
MIT Room 2-131

Quillen's derived functor notion of homology provides interesting and useful invariants in a variety of homotopical contexts, and includes as special cases (i) singular homology of spaces, (ii) homology of groups, and (iii) Andre-Quillen homology of commutative rings. Working in the topological context of symmetric spectra, we study topological Quillen homology of commutative ring spectra, E_n ring spectra, and more generally, algebras over any operad O in spectra. Using a QH-completion construction—analogous to the Bousfield-Kan R-completion of spaces—we prove under appropriate conditions (a) strong convergence of the associated homotopy spectral sequence, and (b) that connected O-algebras are QH-complete—thus recovering the O-algebra from its topological Quillen homology plus extra structure. A key problem in usefully describing this extra structure was solved recently using homotopical ideas in joint work with Kathryn Hess that describes a rigidification of the derived comonad that coacts on the object underlying topological Quillen homology, and plays the analogous role (in symmetric spectra) of the Koszul cooperad associated to a Koszul operad in chain complexes. This talk is an introduction to these results with an emphasis on proving (a) and (b) which is joint work with Michael Ching.