ALGEBRA SEMINARS

Topological Equivalences of E_∞ DGAs

Haldun Özgür Bayındır

The University of Haifa

e-mail: bayindir@math.haifa.ac.il

web: https://sites.google.com/view/ozgurbayindir/home

ABSTRACT

In algebraic topology we often encounter chain complexes with extra multiplicative structure. For example, the cochain complex of a topological space has what is called the E_∞-algebra structure which comes from the cup product.

In this talk I present an idea for studying such chain complexes, E_∞ differential graded algebras (E_∞ DGAs), using stable homotopy theory. Namely, I discuss new equivalences between E_∞ DGAS that are defined using commutative ring spectra. We say E_∞ DGAs are E_∞ topologically equivalent when the corresponding commutative ring spectra are equivalent. Quasi-isomorphic E_∞ DGAs are E_∞ topologically equivalent. However, the examples I am going to present show that the opposite is not true; there are E_∞ DGAs that are E_∞ topologically equivalent but not quasi-isomorphic. This says that between E_∞ DGAs, we have more equivalences than just the quasi-isomorphisms.

I also discuss interaction of E_∞ topological equivalences with the Dyer-Lashof operations and cases where E_∞ topological equivalences and quasi-isomorphisms agree.

DATE AND TIME: 6th of February, 2019, Wednesday, 11:00

PLACE: Dokuz Eylül University, Tınaztepe Campus, Faculty of Science
Department of Mathematics, Buca/İzmir. **Room B206.**