Mathematisches
Forschungsinstitut
Oberwolfach

Member of
Leibniz
Association

Oberwolfach Seminar

Cellular E_k-Algebras

Organizers: Soren Galatius, Kobenhavn
             Alexander Kupers, Toronto
             Oscar Randal-Williams, Cambridge UK
Date (ID):   23 – 29 May 2021 (2121a)
Deadline: 11 April 2021

This seminar is an introduction to the homotopy theory of E_k-algebras in spaces and chain complexes, aimed towards applications to the homology of moduli spaces.

We will cover foundational topics including cellular E_k-algebras, derived E_k-indecomposables (i.e. topological Quillen homology), the Hurewicz theorem in this context, the relationship between derived E_k-indecomposables and iterated bar constructions, the description of the homology of free E_k-algebras, and several spectral sequences associated to cellular E_k-algebras.

These techniques will then be applied to E_k-algebras given by various moduli spaces, where the phenomenon of homological stability can be easily understood from the perspective of E_k-cells. The highlight of this seminar will be the recently discovered "secondary homological stability" for mapping class groups of surfaces. In addition to the homotopy-theoretic techniques for working with cellular E_k-algebras this requires detailed input specific to mapping class groups, which we shall survey.

The seminar takes place at the Mathematisches Forschungsinstitut Oberwolfach. The Institute covers board and lodging. By the support of the Carl Friedrich von Siemens Foundation travel expenses can be reimbursed up to 150 EUR in average per person (against copies of travel receipts). The number of participants is restricted to 25.

Applications including

- full name and address, incl. e-mail address
- short CV and publication list
- present position, university
- name of supervisor of Ph.D. thesis
- a short summary of previous work and interest
- title, ID and date of the intended seminar

should be sent preferably by e-mail (with attachments in pdf format) via **seminars@mfo.de** until 11 April 2021 to:

Mathematisches Forschungsinstitut Oberwolfach
Vice Director
Schwarzwaldstr. 9 – 11
77709 Oberwolfach
Germany