

1. DAY 1: HISTORY; HIGHER HOMOTOPIES THE SIMPLE OLD-FASHIONED WAY

- (1) Overview
- (2) Talk 1:  $A_\infty$ -spaces, classifying spaces, structures on classifying spaces
- (3) Talk 2: Adjunctions,  $(\Sigma^n, \Omega^n)$ , monads, and Beck's monadicity theorem
- (4) Talk 3: Operads, monads, and their algebras; little  $n$ -cubes
- (5) (Evening) Talk 4: James construction and the Hilton–Milnor theorem

2. DAY 2: THE RECOGNITION PRINCIPLE; MULTIPLICATIVE STRUCTURES

- (1) Talk 5:  $E_n$ -spaces,  $E_\infty$ -spaces and the recognition principle
- (2) Talk 6: The approximation theorem - history and outline of the proof
- (3) Talk 7: Operad pairs; examples; the Steiner and linear isometries operads
- (4) Talk 8: Monad pairs,  $E_\infty$ -ring spaces and  $E_\infty$  ring spectra
- (5) (Evening) Talk 9:  $H_*(CX)$  and  $H_*(\Omega^n \Sigma^n X)$  as functors of  $H_*(X)$

3. DAY 3: CATEGORICAL MULTIPLICATIVE STRUCTURE

- (1) Talk 10: Symmetric monoidal and bimonoidal categories, permutative and bipermutative categories, endomorphism operad pairs, and strictification
- (2) Talk 11: From symmetric bimonoidal categories to  $E_\infty$ -ring spectra
- (3) Talk 12: The Barratt–Priddy–Quillen theorem and algebraic  $K$ -theory
- (4) Talk 13: Overview of equivariant generalizations
- (5) (Evening) Talk 14: The Goerss–Hopkins recognition of  $E_\infty$  ring spectra

4. DAY 4: EQUIVARIANT SPACES

- (1) Talk 15:  $G$ -spaces,  $G$ -CW complexes,  $G$ -Postnikov towers, fixed point and orbit adjunctions, homotopy groups and the Whitehead theorem
- (2) Talk 16: Orbit categories and the equivalence of homotopy categories, coefficient systems, Bredon cohomology of  $G$ -spaces and axioms

5. DAY 5: EQUIVARIANT SPECTRA

- (1) Talk 17: Equivariant stable homotopy theory,  $G$ -prespectra,  $G$ -spectra, and the  $(\Sigma^\infty, \Omega^\infty)$  adjunction
- (2) Talk 18: Mackey functors and  $RO(G)$ -graded cohomology theory
- (3) Talk 19: The additive equivariant recognition principle for  $G$ -categories
- (4) Talk 20: The multiplicative recognition principle for  $G$ -categories; the equivariant Barratt–Priddy–Quillen theorem and algebraic  $K$ -theory
- (5) (Evening) Talk 21: The Atiyah–Segal completion theorem, the Segal conjecture, and equivariant cobordism; the evenness conjecture.

6. DAY 6: ORBITAL PRESHEAVES AND QUESTIONS

- (1) Talk 22: The equivariant approximation theorem
- (2) Talk 23: The general theory of composite adjunctions
- (3) Talk 24: The recognition principle for orbital presheaves; examples: Eilenberg–MacLane  $G$ -spectra, unit  $G$ -spectra, and Picard groups
- (4) Ending: questions and speculations - homological and motivic applications of the general theory? equivariant and motivic chromatic theory?