May 2023 Duality for C^*BG : index of four lectures

ICTS

Bangalore

Lectures 1 & 2 (Algebra)

1. Poincaré duality ; examples
2. Group cohomology ; examples
3. Benson-Carlson duality ; examples
4. Local cohomology ; properties, examples
5. Gorenstein duality ; examples
6. Statement of the local cohomology theorem (LCT)
7. Proof of the functional equation.
8. Proof of LCT (modulo multiperiodic resolutions)
9. Multiperiodic resolutions (via products of spheres via supports)
10. SubHopf algebras of the Steenrod algebra

Lectures 3 & 4 (Topology)

11. Context. Definition of Gor^a & $GorD^a$
12. The two contexts : algebra & $C^*(X)$.
13. Statement of the theorem
    - C^*BG is Gor^0, has $GorD^0$ & $aLCT^0$
14. Strategy of proof
15. Morita theory ; p-torsion abgps
16. k-cellular approximation & dc completion
17. Proof of Gor^0 for p-group (via Morita theory)
18. Proof of $Gor^0 \Rightarrow GorD^0$ (via Morita theory)
19. Proof base of Gor^0 via ascent from $U(n)$, $U(n)/G$
20. Algebraic cellularization
21. Extensions to other groups
22. Rational spaces
23. ku & KO (transfer along relGor)