

Algebraic K-Theory

Summer term 2011

Exercise sheet 10

Lück / Wegner

Exercise 28:

Let V and W be unitary finite-dimensional G -representations ($G = \mathbb{Z}/t$).
Show that there is a G -homeomorphism

$$S(V \oplus W) \cong SV * SW.$$

Exercise 29:

Prove the following statements:

- a) $L(5; 1, 1)$ and $L(5; 2, 1)$ have the same homotopy groups, homology groups and cohomology groups, but they are not homotopy equivalent.
- b) Any homotopy equivalence $L(7; k_1, k_2) \rightarrow L(7; k_1, k_2)$ has degree 1.

Exercise 30:

Let $t \geq 3$. Calculate

$$\rho(L(V_k); \text{res}_{\mathbb{R}} V_l) \in \mathbb{R}^{>0}$$

for $k \in (\mathbb{Z}/t)^\times$ and $0 \neq l \in \mathbb{Z}/t$.

Please hand in your solutions at Christian Wegner's office (room 3.022) by **Monday, June 20th**. (Slide your solutions under the door if the room is locked.)

There will be no lecture on Friday, June 24th.

Examination date (oral exam): Monday, July 18th and Tuesday, July 19th.

http://www.math.uni-bonn.de/people/wegner/lehre_SS2011/K-theory/