Advanced Topics in Topology:

Algebraic K-Theory

Summer term 2011

Exercise sheet 2 Lück / Wegner

Exercise 4:

Compute $K_0(\mathbb{C}[\mathbb{Z}/2])$.

Exercise 5:

Let A be a commutative ring and let $i\colon H \to G$ be the inclusion of a subgroup of finite index. Consider the map

$$i^*\colon K_0(AG) \to K_0(AH),\ [P] \mapsto [\operatorname{res}_i(P)]$$

where $\operatorname{res}_i(P)$ denotes the AH-module which arises from the AG-module P by restricting the group action.
Show that i^* is a well-defined group homomorphism.

Exercise 6:

Let K be a field and let V be a vector space over K with infinite countable basis. We denote by $R := \operatorname{End}_K(V)$ the endomorphism ring of V.

a) Show that the (left) R-modules R and $R \oplus R$ are isomorphic.

b) Is $K_0(R)$ the trivial group?

Please hand in your solutions at Christian Wegner's office (room 3.022) by **Monday, April 18th**. (Slide your solutions under the door if the room is locked.)

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