Acta Math., 188 (2002), 1–39

Algebraic K-theory of topological K-theory

by

CHRISTIAN AUSONI

University of Oslo
Oslo, Norway

and

JOHN ROGNES

University of Oslo
Oslo, Norway

Contents

Introduction

We are interested in the arithmetic of ring spectra.

To make sense of this we must work with structured ring spectra, such as S-algebras [EKMM], symmetric ring spectra [HSS] or Γ-rings [Ly]. We will refer to these as **S**-algebras. The commutative objects are then commutative **S**-algebras.

The category of rings is embedded in the category of **S**-algebras by the Eilenberg–MacLane functor $R \mapsto HR$. We may therefore view an **S**-algebra as a generalization of a ring in the algebraic sense. The added flexibility of **S**-algebras provides room for new examples and constructions, which may eventually also shed light upon the category of rings itself.

In algebraic number theory the arithmetic of the ring of integers in a number field is largely captured by its Picard group, its unit group and its Brauer group. These are

The first author was supported by the Swiss NSF grant 81LA-53756.