Farrell, F. T.; **Jones, L. E.**
Isomorphism conjectures in algebraic K-theory. (English) ⏐Zbl 0798.57018⏐

This paper describes a conjecture on the calculation of four functors $\mathcal{P}_*$, $\mathcal{P}_*^{\text{diff}}$, $\mathcal{K}_*$, and $\mathcal{L}_*^{-\infty}$ that map the category of topological spaces to the category of Ω-spectra. The functor $\mathcal{P}_*$ (or $\mathcal{P}_*^{\text{diff}}$) maps the space X to the Ω- spectrum of stable topological (or smooth) pseudoisotopies of X. The functor $\mathcal{K}_*$ maps the path-connected space X to the algebraic K-theoretic Ω-spectrum for the integral group ring $Z\pi_1 X$. If X is path connected then the functor $\mathcal{L}_*^{-\infty}$ maps X to the $L^{-\infty}$-surgery classifying spaces for oriented surgery problems with fundamental group π_1.

Results obtained by the authors and others over recent years indicate that for each of these functors it should be possible to compute the associated Ω-spectra from the Ω-spectra associated to the covering spaces X_H where H runs through the subgroups of $\pi_1 X$ that are either finite or virtually infinite cyclic. The paper formulates a precise conjecture along these lines and verifies it for any X whose fundamental group is a co-compact discrete subgroup of a virtually connected Lie group in the case of the two functors $\mathcal{P}_*$ and $\mathcal{P}_*^{\text{diff}}$. A similar verification for the functor $\mathcal{L}_*^{-\infty}$ is promised for a later paper.

Reviewer: J.Hodgson (Philadelphia)

MSC:

57R67	Surgery obstructions, Wall groups
19D50	Computations of higher K-theory of rings
57N37	Isotopy and pseudo-isotopy
19D35	Negative K-theory, NK and Nil

Cited in **27** Reviews
Cited in **80** Documents

Keywords:

stable topological pseudoisotopies; assembly map; surgery group; Ω-spectra; $L^{-\infty}$-surgery classifying spaces; covering spaces; fundamental group; co-compact discrete subgroup of a virtually connected Lie group

Full Text: DOI