Hill, Michael A.; **Hopkins, Michael J.**; **Ravenel, Douglas C.**

The Arf-Kervaire invariant problem in algebraic topology: Introduction. (English)

Zbl 1223.55009

Jerison, David (ed.) et al., Current developments in mathematics, 2009. Somerville, MA: International Press (ISBN 978-1-57146-146-9/hbk). 23-58 (2010).

The authors have proved the non-existence of elements of Kervaire invariant one, which is the solution to one of the oldest problems in algebraic topology; cf. their preprint [On the non-existence of elements of Kervaire invariant one, arXiv:0908.3724]. As the authors write, this paper gives the history and background of the problem, along with a short summary of their solution to it and a description of some of the tools they use. Indeed, they summarize them effectively. This will be a great help for those who have interest in the problem or are going to understand their proof.

For the entire collection see [Zbl 1205.00075].

Reviewer: Katsumi Shimomura (Kochi)

MSC:

55Q91	Equivariant homotopy groups
55Q45	Stable homotopy of spheres
57R15	Specialized structures on manifolds (spin manifolds, framed manifolds, etc.)
55P42	Stable homotopy theory, spectra
55-02	Research exposition (monographs, survey articles) pertaining to algebraic topology
55P91	Equivariant homotopy theory in algebraic topology
57R55	Differentiable structures in differential topology
57R60	Homotopy spheres, Poincaré conjecture
57R77	Complex cobordism (U- and SU-cobordism)
57R85	Equivariant cobordism

Keywords:

Kervaire invariant; Arf invariant; homotopy