

Preface to the Present Volume

The papers in this volume have been submitted by participants of the Symposium on Homotopy theory and related topics, held at Kyoto University from December 4, 1984 until December 8, 1984, and supported by the Ministry of Education. There were twenty five invited speakers and nearly one hundred other participants. The members of the Program Committee would like to thank them for their participation, and the referees of the submitted papers for their kind cooperation.

The papers are divided into the following four parts:

- I. Simple homotopy theory and G -actions.
- II. Classifying spaces and characteristic classes.
- III. Topology of manifolds.
- IV. Homotopy problems—unstable and stable cases.

At the top of each part, except the last one, we present expository lectures of S. Araki, H. Toda and M. Kato, rearranged for the convenience of the readers. The top of the last part is a posthumous work of S. Oka, who met a sudden and premature death two months before the Symposium.

Here, we introduce some aspects of the papers.

The topics of Part I are related to so called “Whitehead torsion” and its equivariant version which are indispensable in discussing the topology of non-simply connected manifolds and complexes. S. Araki’s lecture is a rearrangement of S. Illman’s equivariant Whitehead group $Wh_G(X)$ of finite G -CW-complexes, where G is a compact Lie group, by making use of restricted G -Whitehead groups with respect to families of closed subgroups of G . One merit of this approach is his Theorem 9.3, which is essential in the paper “Equivariant s -cobordism theorems” mentioned below. The paper of K. Kawakubo is a discussion on G -homotopy equivalences $f: M_1 \rightarrow M_2$ between G -manifolds M_1, M_2 . He gives necessary and sufficient conditions for f to be a tangential G -homotopy equivalence, and to be a simple G -homotopy equivalence and also counterexamples to an equivariant h -cobordism theorem and an equivariant s -cobordism theorem. Araki and Kawakubo will publish a paper titled “Equivariant s -cobordism theorems” based on these two works, and their works are closely related to the next paper of Matumoto-Shiota. The paper of T. Matumoto and M. Shiota is a solution of the unique G -triangulation of G -manifold. They