Bull. Korean Math. Soc. **23**(1986), No. 2, p. 200

CYCLIC MAPS AND RELATED TOPICS

YEON SOO YOON

In this thesis, we study cyclic maps and related topics. Usually, we work in the category of spaces with base points and having the homotopy type of locally finite CW-complexes. A space X is called a G-space if each element of homotopy groups of X is a homotopy class of cyclic maps. Any H-space is a G-space, but the converse does not hold. Firstly, we define weakly cyclic maps closely related to G-spaces, and find a condition, under which H-spaces and G-spaces are equivalent. It follows easily that among spheres only S^1, S^3 and S^7 are G-spaces. Secondly, we study homotopy groups of the free mapping space X^{S^p} with cyclic map as base point, and generalize the result of Koh. Thirdly, we study cyclic maps on the H-cogroup domains. We can easily obtain that for each $\alpha \in \pi_{2k+1}(S^{2k+1})$, $\beta \in \pi_n(S^{2k+1})$ $(k \geq 0, n \geq 1)$, $2[\alpha, \beta] = 0$ in $\pi_{2k+n}(S^{2k+1})$, where $[\ ,\ ]$ is the Whitehead product. Finally, we introduce the evaluation subgroup of the fundamental group of a transformation group as a generalization of the evaluation subgroup of the fundamental group of a space. We show that the evaluation subgroup is an invariant of the homotopy type of the transformation group.

Hannam University
Daejeon 300, Korea

Thesis submitted to Korea University, December 1985. Degree approved February 1986. Supervisor: Professor Moo Ha Woo.