ON A HOMOTOPY CLASSIFICATION OF MAPPINGS OF AN $(n+1)$ DIMENSIONAL COMPLEX INTO AN ARCWISE CONNECTED TOPOLOGICAL SPACE WHICH IS ASPHERICAL IN DIMENSIONS LESS THAN n $(n>2)$

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Pontrjagin classified mappings of a three dimensional sphere into an n dimensional complex, where he made use of a new type of product of cocycles. By the aid of the generalized Pontrjagin's product of cocycles Steenrod enumerated effectively all the homotopy classes of mappings of an $(n+1)$ dimensional complex into an n sphere. According to the recent issue of the Mathematical Reviews it is reported that M. M. Postnikov extended Steenrod's case to the case where an arcwise connected topological space which is aspherical in dimensions less than n, takes place of an n sphere. (Postnikov M. M., Classification of continuous mappings of an $(n+1)$ dimensional complex into a connected topological space which is aspherical in dimensions less than n. Doklady Akad. Nauk SSSR (N.S.) 71., 1027-1028, 1950 (Russian. No. proof is given.)) But here in Japan no details are yet to hand. We intend to give a solution to this problem in case where $n>2$, and also to give an application concerning the $(n+3)$-extension cocycle.

§1. The simplest case where the n-th homotopy group $\pi_n(Y)$ of Y has a finite base, each element of which is not of finite order.

Let X be a finite complex with a fixed decomposition and let Y be an arcwise connected topological space aspherical in dimensions less than n. $\{\alpha_i; i=1, \ldots, \lambda\}$ denotes a base of $\pi_n(Y)$ and a mapping $h_i: S^n \to Y$ $(i=1, \ldots, \lambda)$ represents α_i. Let $\eta: S^{n+1} \to S^n$ be a mapping, which represents the generator β of $\pi_{n+1}(S^n)$. $(h_i\eta)$ denotes the element of $\pi_{n+1}(Y)$ which is represented by a mapping $h_i\eta: S^{n+1} \to Y$. Now two groups $\pi_n(Y)$ and $\pi_n(Y)$ form a group pair with respect to $\pi_{n+1}(Y)$ when we define

i) $\alpha_i \circ \alpha_j = 0$, where $i \neq j$, and 0 is the unity of $\pi_{n+1}(Y)$,

ii) $\alpha_i \circ \alpha_i = (h_i\eta)$,

iii) the bilinearity is assumed with respect to $\circ$ operation.

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