

NOTE ON MICROBUNDLES^{*)}

MASAHISA ADACHI

(Received February 23, 1966)

In [2] Lashof and Rothenberg have defined the css-group O and the Kan complex PD , and shown a certain exact sequence of abelian groups (Theorem (4.2)) which is fundamental to the studies of the PL-microbundles and smoothing.

In the present note we shall define a css-group H for the topological microbundles parallel to the css-group PL for the PL-microbundles (§ 1), and show an analogous exact sequence of abelian groups (§ 4) which seems to have some meaning to the study of the topological microbundles (§ 2, § 3).

Our method is quite analogous to that of Lashof and Rothenberg [2], and Milnor [3], and is based on Heller's theory [1].

The author is grateful to Professors R. Shizuma, K. Shiraiwa and T. Nakamura for their kind criticisms.

0. Preliminaries

a) Directed systems of css-complexes.

Let Σ be a partially ordered set, i.e. a set in which we have a transitive relation $<$ defined for some (but not necessary all) pairs of elements. Σ is called a directed set if every pair of elements has a common successor: given σ and τ in Σ there is an element ρ in Σ satisfying $\sigma < \rho$ and $\tau < \rho$.

In the present note all css-complexes are supposed to satisfy Kan's extension condition unless otherwise stated.

Suppose to each element σ of Σ is assigned a css-complex¹⁾ K_σ (css-group G_σ) and to each pair of elements $\sigma < \tau$ of Σ there corresponds a css-map $h_{\sigma\tau}$ of K_σ into K_τ (css-homomorphism $h_{\sigma\tau}$ of G_σ into G_τ) such that if $\rho < \sigma < \tau$ then

^{*)} This work is partially supported by Yukawa Fellowship.

¹⁾ For the theory of css-complexes, see for example Heller [1], Moore [5], Puppe [6].