PSEUDOCOMPACT ALGEBRAS, PROFINITE GROUPS AND CLASS FORMATIONS

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Communicated by A. Rosenberg, October 7, 1965

This note announces the main results obtained in a paper of the same title to appear in the Journal of Algebra, in which complete proofs can be found.

Introduction. We recall that a topological group G is a *profinite group* if it is the inverse limit of finite groups and that a G-module A is a *discrete G-module* if $A = \bigcup A_H$, where H runs through the open subgroups of G and A_H is the set of elements of A left fixed by H (cf. [**4**]). We note that if H is a normal subgroup of K, then A_H is a K/H-module. A *class formation* consists of a profinite group G and a G-module satisfying certain axioms which we do not repeat here: the reader will find them and their consequences in [**1**]. The reciprocity map for the formation gives a homomorphism

$$\omega_H\colon A_H \to H/H'$$

for each open subgroup H of G since H/H' is the group of the maximal abelian extension of H (cf. p. 179 of [**6**]). Let C_H be the kernel of ω_H and let D_H be its cokernel. For each subgroup K of G, containing H as a normal subgroup, the exact sequence of K/H-modules

$$0 \to C_H \to A_H \to H/H' \to D_H \to 0$$

gives rise to homomorphisms

$$d_q\colon \hat{H}^{q-2}(K/H, D_H) \to \hat{H}^q(K/H, C_H)$$

as the composition of two coboundary maps.

THEOREM 1. *The following are equivalent for a class formation*:

(i) $\operatorname{scd}_p G \leqq 2$,

(ii) *For every integer q, the map d_q induces an isomorphism onto on the p-primary components.*

The second condition is equivalent to a group theoretic property introduced by Kawada in [**3**].

For any field k, let G_k denote the Galois group of the separable closure of k. The following results about the associated class forma-

[1] This paper was written with partial support of NSF grant GP4124 while the author was T. H. Hildebrandt Instructor at the University of Michigan.