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Erratum

Volume **149**, Number 2 (1992), in the article "Semisimple Extensions and Elements of Trace 1," by Miriam Cohen and Davida Fischman, pages 419–437: H.-J. Schneider has recently pointed out two errors in this paper. The following are corrected versions of the appropriate theorems.

THEOREM 1.8. *Let H be a Hopf algebra, Frobenius as an algebra, and let* A/A^H *be an* H^**-Galois extension (with* x_i, y_i *the elements of A satisfying* $\sum [x_i, y_i] = x_i t y_i = 1$*). Then conditions* (1)–(5) *are equivalent*:

(1) A/A^H *is a separable extension.*

(2) $\exists \omega \in C_{A \# H}(A)$ *with* $T \rightarrow \omega = 1$.

(3) *A is an A-bimodule direct summand of* $A \# H$.

(4) *There exists an element* $c \in C_A(A^H)$ *such that* $\sum x_i c y_i = 1$.

(5) [DT, Th. 3.14] *There exists a total integral* ϕ: $H \rightarrow C_A(A^H)$.

In the original version there was also a condition analagous to (4), for a general element $c \in A$. This condition, however, does not imply the others. In particular, the mapping $A \otimes_{A^H} A \rightarrow A \otimes_{A^H} A$ given by $x \otimes y \mapsto xc \otimes y$ exists only if c is in the centralizer of A^H in A. In fact, Schneider showed us a counterexample to this condition implying condition (1), for an arbitrary $c \in A$.

THEOREM 1.11. *Let H be a cocommutative Hopf algebra, A a left H-module algebra with a central trace* 1 *element c, and* σ *an invertible normal 2-cocycle. Then* $A \#_\sigma H$ *is a separable extension of A.*

In the original version, we required only that the left integral $t \in \int_l$ be a cocommutative element. However, the twisted module condition can be applied as necessary to the third line of calculation in the proof only if u_7 and u_8 are interchanged—and this is possible only if H is cocommutative.

Theorem 1.11 is used to prove Theorems 1.20 and 1.23 under hypothesis (ii). Thus in both cases, hypothesis (ii) should be:

(ii) A has a central element of trace 1 and H is cocommutative.

REFERENCE

[DT] Y. DOI AND M. TAKEUCHI, Hopf–Galois extensions of algebras, the Miyashita–Ulbrich action, and Azumaya algebras, *J. Algebra* **121** (1989), 488–516.