**MR1055605 (91f:17039)** 17D92
**Katambe, Issoufou**; **Koulibaly, Akry** (BF-OUAG); **Micali, Artibano** (F-MONT2)
**Les algèbres quasi-constantes. (French) [Quasi-constant algebras]**
*Algèbres génétiques* (*Montpellier*, 1985), 47–64, *Cahiers Math. Montpellier*, 38, *Univ. Sci. Tech. Languedoc*, *Montpellier*, 1989.

An algebra $A$ over a commutative ring $K$ is said to be quasiconstant if (i) it admits a homomorphism $x \to w(x)$ onto $K$, and (ii) if it contains an element $e$ such that $(x^2)^2 = w^4(x)e$ for all $x \in A$. The first two theorems give equivalent characterizations of quasiconstant algebras when $K$ is an integral domain of characteristic $\neq 2$ (and sometimes $\neq 3$). Classification is studied next. In each of dimensions 1 and 2 there is only one class, and in dimension 3 there are four classes of nonisomorphic quasiconstant algebras. Next, conditions are obtained for a linear mapping to be a derivation. A quasiconstant algebra has a decomposition $A = K_e + U + V$ as a direct sum of vector spaces, relative to the unique idempotent $e$. For char $K \neq 2$, the Lie algebra of derivations of $A$ is shown to be isomorphic to a subalgebra $L_K(A)$ of $L_K(U,V)$, satisfying certain conditions, where $L_K(U,V)$ is the Lie algebra of elements $(f,g,h)$, $f \in \mathrm{End}_K(U)$, $g \in \mathrm{Der}_K(V)$, $h \in \mathrm{Hom}_K(U,V)$. Results are also obtained for derivations when char $K = 2$, which are similar to those for Bernstein algebras [M. T. Alcalde et al., Proc. London Math. Soc. (3) **58** (1989), no. 1, 51–68; MR0969546 (90b:17047)]. Corresponding results are obtained for the automorphism group of $A$. In char $K \neq 2$ it is shown to be isomorphic to the group of elements $(f,g,h)$, $f \in \mathrm{GL}_K(U)$, $g \in \mathrm{GL}_K(V)$, $h \in \mathrm{Hom}_K(U,V)$ with composition $(f,g,h) * (f',g',h') = (f \circ f', g \circ g', h \circ f' + g \circ h')$. In the final section it is shown that in every quasiconstant algebra over a reduced ring, the homomorphism onto $K$ is unique.

{For the entire collection see MR1055600 (90m:17045)}

*P. Holgate*