MR993027 (90d:17030) 17D92

Mallol, Cristian (F-MONT3); **Micali, Artibano** (F-MONT2)

Sur les algèbres de Bernstein. II. (French) [On Bernstein algebras. II]

Linear Algebra Appl. **117** (1989), 11–19.

A Bernstein algebra B is one that admits a homomorphism ω to its base field, and for which $((x^2)^2) = \omega^2(x)x^2$ for all x. This property entails a large number of identities, obtained by polarising the defining identity, and also entails a decomposition $B = Ke \oplus U \oplus V$, where e is an idempotent, and U, V are subspaces of elements such that $eu = \frac{1}{2}u$, $ev = 0$. The present paper is devoted to the study of weak Bernstein algebras, which the authors define to be those that admit the decomposition $Ke \oplus S$, with respect to an idempotent e, and also satisfy the identities $x^2 = 2ex^2 + 4(ex)^2$, $(ex)x^2 = 0$, $ex = 2e(ex)$. The weak Bernstein algebras properly include the Bernstein algebras. The authors prove that weak Bernstein algebras enjoy many of the properties that have been established already for Bernstein algebras, both in respect of the properties of the elements under multiplication by an idempotent, the decomposition of the subspace S, and in respect of the automorphisms of the algebra. The difference is crystallised in the identity satisfied by the elements of a weak Bernstein algebra, $((x^2)^2) = \omega^2(x)x^2 + \{[x - \omega(x)e]^2\}^2$.

{Part I has been reviewed [MR0969546 (90b:17047)].} *P. Holgate*