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E-ideals in Bernstein algebras. (English summary)
Nonassociative algebra and its applications (São Paulo, 1998), 35–42, Lecture Notes in

Let \((A, \omega)\) be a baric algebra. Then
\[
(p(x) = x^n + \gamma_1 \omega(x)x^{n-1} + \cdots + \gamma_{n-1} \omega(x)^{n-1}x,
\]
where \(\gamma_i \in F\) and \(1 + \gamma_1 + \cdots + \gamma_{n-1} = 0\), is called a train polynomial of \((A, \omega)\). The ideal \(E_A(1, \gamma_1, \ldots, \gamma_{n-1})\) of \(A\) generated by all values \(p(a)\) with \(a \in A\) is called the 

In this paper the author studies \(E\)-ideals in Bernstein and train algebras. For train
algebras it is proved that if \((A, \omega)\) is a train algebra with train equation \((eqtrain)\) as
above (i.e. which satisfies \(p(x) = 0\) for all \(x \in A\) and the equation is minimal) and
\[
p(X) = X(X-1)p_1(X)^{n_1} \cdots p_k(X)^{n_k}
\]
is the prime decomposition of \(p(X)\) in \(F[X]\), then the maximum number of \(E\)-ideals in \(A\) is 
\(1 + n_1)(1 + n_2) \cdots (1 + n_k)\).

When \((A, \omega)\) is a Bernstein algebra (not necessarily of finite dimension) and \(N = U_e \oplus Z_e\) is nil of index \(r\), it is shown that \(A\) satisfies the train equation \((x^3 - x^2)(x - \frac{1}{2})^{r-2} = 0\);
so \(A\) has at most \(2r - 2\) \(E\)-ideals, which are determined by the train polynomials 
\[f_k(x) = (x^2 - x)(x - \frac{1}{2})^k\]
and \(g_k(x) = (x^3 - x^2)(x - \frac{1}{2})^k\) for \(k = 0, \ldots, r - 2\). Furthermore, the
author proves that every nuclear Bernstein algebra has at most 3 \(E\)-ideals and if \(A = Fe \oplus U_e \oplus Z_e\) is Bernstein-Jordan, then its \(E\)-ideals are 
\(E_A(1, -1) = U_e Z_e \oplus Z_e\) and 
\(E_A(1, -1, 0) = 0\).

\{For the entire collection see MR1751123 (2001a:17002)\}

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