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E-ideals in baric algebras: basic properties. (English summary)
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If A is a commutative algebra over a field F ($\operatorname{ch} F \neq 2$) and $\omega\colon A \to F$ is a nonzero homomorphism of algebras (weight homomorphism), the algebra (A, ω) is called a baric algebra. Then $N = \{a \in A |\ \omega(a) = 0\}$ is an ideal of codimension 1.

Etherington introduced the notion of train algebra over $\mathbf{R}$ or $\mathbf{C}$ as a baric algebra that satisfies an equation of the type $p(a) = 0$, for every $a \in A$, where $p(x) = x^n + \gamma_1\omega(x)x^{n-1} + \cdots + \gamma_{n-1}\omega(x)^{n-1}x$ and also the ideals P and Q_λ generated, respectively, by the elements $a^2 - \omega(a)a$ and $a^3 - (1+\lambda)\omega(a)a^2 + \lambda\omega(a)^2a$, where a runs over A.

In the present paper generalized Etherington ideals (E-ideals) are considered. Now $E_A(1, \gamma_1, \cdots, \gamma_{n-1})$ or $E_A(p)$ is the ideal generated by all elements of the form $a^n + \gamma_1\omega(a)a^{n-1} + \cdots + \gamma_{n-1}\omega(a)^{n-1}a$, where a runs over A. So $P = E_A(1-1)$ and $Q_\lambda = E_A(1, -(1+\lambda), \lambda)$, respectively.

Some properties of E-ideals are studied, some of them in relation to the duplicate algebra. Among other results it is proved that $E_A(p) \subset E_A(1, -1)$ and that $E_A(r) = E_A(p) + E_A(q)$, where r is the greatest common divisor of p and q. In particular, the result by Etherington: If p and q are relatively prime then $E_A(1, -1) = E_A(p) + E_A(q)$, is obtained here as a corollary.

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