Rota-type operators on a commutative modular group algebra

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Currently (for example, see \[1, 2, 3\]) the Rota-type operators on associative algebras are actively studied. Examples of such operators are the following:

- Rota-Baxter operator of length $\lambda$: $f(x)f(y) = f(xf(y) + f(x)y + \lambda xy)$;
- Reynolds operator: $f(x)f(y) = f(xf(y) + f(x)y - f(x)f(y))$;
- Nijenhuis operator: $f(x)f(y) = f(xf(y) + f(x)y - f(xy))$;
- Average operator: $f(x)f(y) = f(xf(y))$.

All such Rota-type operators were considered on algebras over the field of characteristic 0.

We present Rota-type operators on the group algebra $F[G]$ of a finite abelian 2-group $G$ over the field $F$ of characteristic 2 and give some constructions of such operators for arbitrary characteristic $p \geq 2$ (see [4]). While solving this problem the GAP System of computational algebra [5] was actively used.

References


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On Leibniz algebras with two types of subalgebras

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Let $L$ be an algebra over a field $F$ with the binary operations $+$ and $[,]$. Then $L$ is called a Leibniz algebra (more precisely a left Leibniz algebra) if it satisfies the (left) Leibniz identity $[[a,b],c] = [a,[b,c]] - [b,[a,c]]$, for all $a, b, c \in L$. 

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