Rota-type operators on a commutative modular group algebra

Victor Bovdi, Vasyl Laver

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 λ: $f(x)f(y) = f(xf(y) + f(x)y + \lambda xy)$;
- 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 $\mathbb{F}G$ of a finite abelian 2-group G over the field $\mathbb{F}$ 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 $a,b,c \in L$.