Experimental Mathematics, 21(4):418, 2012

ISSN: 1058-6458 print / 1944-950X online
DOI: 10.1080/10586458.2012.738538

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Corrigendum

Corrigendum to: "The Alternative Operad Is Not Koszul" by Askar Dzhumadil'daev and Pasha Zusmanovich

In [Dotsenko, §4], we formulated a conjecture that in characteristic 3, the dimension of the nth homogeneous component of the dual alternative operad, i.e. an operad governed by two identities – associativity and

$$(^*) \qquad xyz + yxz + zxy + xzy + yzx + zyx = 0$$

(or, what is the same, dimension of the multilinear component of the corresponding free algebra), is equal to $2^n - n$.

In fact, this was proved earlier by Lopatin (see [Lopatin 2005, §7, Remark 2]): he computes the corresponding dimension for the variety of associative algebras satisfying the identity $x^3 = 0$, what for multilinear components is equivalent to the corresponding dimensions of its full linearization (*). Lopatin's proof consists of computer calculations for small values of n (as we did in [Dzhumadil'daev and Zusmanovich 2011]), and an argument based on the composition (=diamond) lemma reducing the general case to the cases of small n's.

Thanks are due to Ivan Kaygorodov for bringing this fact to our attention, and to Artem Lopatin for explaining some points of [Lopatin 2005].

Recently, a more general result was established by [Dotsenko]. Dotsenko's proof utilizes a generalization of composition lemma for operads, and does not depend on any computer calculations.

REFERENCES

[Dotsenko] V. Dotsenko. "Dual alternative algebras in characteristic three." To appear in *Comm. Algebra*. Available online (arXiv:1111.2289v2).

[Dzhumadil'daev and Zusmanovich 2011] A. Dzhumadil'daev and P. Zusmanovich. "The alternative operad is not Koszul." *Experiment. Math.* 20 (2011), 138–144; arXiv:0906.1272.

[Lopatin 2005] A.A. Lopatin. "Relatively free algebras with the identity $x^3 = 0$." *Comm. Algebra* 33 (2005), 3583–3605; arXiv:math/0606519.