

# 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  $n$ th homogeneous component of the dual alternative operad, i.e. an operad governed by two identities – associativity and

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

(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.