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Review text:

In the Dniester Notebook, I. P. Shestakov proposed to describe the nucleus and the center of a free alternative algebra A as a completely characteristic subalgebra. The authors have studied this problem for elements of low degree in A . So, in [Hentzel, I. R., Peresi, L. A. The nucleus of the free alternative algebra. *Experiment. Math.* **15** (2006), no. 4, 445–454.], they computed all central elements of degree 7 and showed that this is the smallest degree for the elements in the center of A . Moreover, in [Hentzel, I. R., Peresi, L. A. Central elements of minimal degree in the free alternative algebra. *Non-associative algebra and its applications*, 195–204, *Lect. Notes Pure Appl. Math.*, 246, Chapman & Hall/CRC, Boca Raton, FL, 2006.] the authors determined the elements of degree 5 in the nucleus of A and showed that there are no nuclear elements of lower degree. In the paper under review the authors complete the study of nuclear elements of degree 6. They use the representation theory of the symmetric group and the computer algebra system ALBERT to locate the elements. The problem is that the ALBERT system is not potent enough to find these (6-degree) elements directly, so the authors have to use some representation techniques in order to achieve this and work carefully to decode and simplify them.

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