

DIVISION ALGEBRAS OF PRIME DEGREE WITH INFINITE GENUS

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The genus $\mathbf{gen}(D)$ of a finite-dimensional central division algebra D over a field F is defined as the collection of classes $[D'] \in Br(F)$, where D' is a central division F -algebra having the same maximal subfields as D . In [1], it is shown that there are quaternion algebras with infinite genus. Besides, it is proved that there exists a field F over which there are infinitely many nonisomorphic quaternion algebras with center F , and any two quaternion division algebras with center F have the same genus. In [2], we generalize the results from [1] to the case of division algebras of any prime degree. More precisely, for any prime p , we construct a division algebra of degree p with infinite genus. Moreover, we show that there exists a field K such that there are infinitely many nonisomorphic central division K -algebras of degree p , and any two such algebras have the same genus.

References

1. Meyer J.S. Division algebras with infinite genus // Bull. London Math. Soc. 2014. V. 46. No. 3. P. 463–468.
3. Tikhonov S.V. Division algebras of prime degree with infinite genus // Preprint [arXiv:1407.5041](https://arxiv.org/abs/1407.5041).