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*What does a group algebra of a free group “know” about the group?*

We describe solutions to the problem of elementary classification in the class of group algebras of free groups. We will show that unlike free groups, two group algebras of free groups over infinite fields are elementarily equivalent if and only if the groups are isomorphic and the fields are equivalent in the weak second order logic. We will show that the set of all free bases of a free group  $F$  is 0-definable in the group algebra  $K(F)$  when  $K$  is an infinite field, the set of geodesics is definable, and many geometric properties of  $F$  are definable in  $K(F)$ . Therefore  $K(F)$  “knows” some very important information about  $F$ . We will show that similar results hold for group algebras of limit groups. These are joint results with A. Myasnikov.