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The interplay between group algebras and enveloping algebras

Let $\mathbb{F}G$ and $\omega(G)$ be the group algebra and augmentation ideal of a group G over a field \mathbb{F} of characteristic p , respectively. We first recall a theorem of Quillen stating that the graded algebra associated to $\mathbb{F}G$ is isomorphic as an algebra to the enveloping algebra of the restricted Lie algebra associated to the dimension series of G . We then extend a theorem of Jennings that provides a basis for the quotient $\omega^n(G)/\omega^{n+1}(G)$ in terms of a basis of the restricted Lie algebra. Finally, we present some applications of these theorems.