ON THE FIRST HOCHSCHILD COHOMOLOGY OF NON-WILD INFINITESIMAL GROUP ALGEBRAS

Abstract: Let k be an algebraically closed field of characteristic $p \geq 3$ and $\mathcal{B}_0(\mathcal{G})$ be the principal block algebra of the group algebra $k\mathcal{G}$ of an infinitesimal group scheme $\mathcal{G}$. We denote by $\mathcal{L} := \mathrm{H}^1(\mathcal{B}_0(\mathcal{G}), \mathcal{B}_0(\mathcal{G}))$ the first Hochschild cohomology of $\mathcal{B}_0(\mathcal{G})$. We study the restricted Lie algebra structure of $\mathcal{L}$ whenever $\mathcal{B}_0(\mathcal{G})$ has finite representation type. When $\mathcal{B}_0(\mathcal{G})$ is tame, we will determine the outer automorphism group of $\mathcal{B}_0(\mathcal{G})$ and the maximal total rank of $\mathcal{L}$.

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