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Nakano and **Cornelius Pillen**. *Third cohomology for algebraic groups and Lie algebras.*

Let G be a simple, simply connected algebraic group over an algebraically closed field of prime characteristic p that is not too small. Let B be a Borel subgroup of G with unipotent radical U . We discuss recent computations of the third degree cohomology groups of B and its Frobenius kernels with coefficients in a one-dimensional module, as well as related computations of Frobenius kernels of G with coefficients in standard induced modules. This work involves new computations of the ordinary Lie algebra cohomology of the Lie algebra of U . (Received September 14, 2015)