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Cohomology of Line Bundles on the Flag Variety for Type G_2

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In the case of an almost simple algebraic group G of type G_2 over a field of characteristic $p > 0$ we study the cohomology modules of line bundles on the flag variety for G . Our main result is a complete determination of the vanishing behavior of such cohomology in the case where the line bundles in question are induced by characters from the lowest p^2 -alcoves.

When U_q is the quantum group corresponding to G whose parameter q is a complex root of unity of order prime to 6 we give a complete (i.e. covering all characters) description of the vanishing behavior for the corresponding quantized cohomology modules.

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