The center subalgebra of the quantized enveloping algebra of a simple Lie algebra revisited

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Let $\mathfrak{g}$ be a finite dimensional simple complex Lie algebra and $U = U_q(\mathfrak{g})$ the quantized enveloping algebra (in the sense of Jantzen) with q being generic. In this paper, we show that the center $Z(U_q(\mathfrak{g}))$ of the quantum group $U_q(\mathfrak{g})$ is isomorphic to a monoid algebra, and that $Z(U_q(\mathfrak{g}))$ is a polynomial algebra if and only if $\mathfrak{g}$ is of type $A_1, B_n, C_n, D_{2k+2}, E_7, E_8, F_4$ or G_2. Moreover, when $\mathfrak{g}$ is of type A_n, then $Z(U_q(\mathfrak{g}))$ is isomorphic to a quotient algebra of a polynomial algebra described by n-sequences; when $\mathfrak{g}$ is of type D_n with n odd, then $Z(U_q(\mathfrak{g}))$ is isomorphic to a quotient algebra of a polynomial algebra in $n+1$ variables with one relation; when $\mathfrak{g}$ is of type E_6, then $Z(U_q(\mathfrak{g}))$ is isomorphic to a quotient algebra of a polynomial algebra in fourteen variables with eight relations;