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"A PBW basis for Lusztig's form of untwisted affine quantum groups"

ABSTRACT

Let $\hat{\mathfrak{g}}$ be an untwisted affine Kac-Moody algebra over the field $\mathbb{C}$, and let $U_q(\hat{\mathfrak{g}})$ be the associated quantum enveloping algebra. Let $\mathfrak{U}_q(\hat{\mathfrak{g}})$ be the Lusztig's integer form of $U_q(\hat{\mathfrak{g}})$, generated by q-divided powers of Chevalley generators over a suitable subring R of $\mathbb{C}\big[q, q^{-1}\big]$. We prove a Poincaré-Birkhoff-Witt like theorem for $\mathfrak{U}_q(\hat{\mathfrak{g}})$, yielding a basis over R made of ordered products of q–divided powers of suitable quantum root vectors.

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