

The Universal Askey-Wilson Algebra and the Equitable Presentation of $U_q(\mathfrak{sl}_2)$

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Around 1992 A. Zhedanov introduced the Askey-Wilson algebra $AW(3)$. Recently we introduced a central extension Δ of $AW(3)$ called the universal Askey-Wilson algebra. In this paper we discuss a connection between Δ and the quantum algebra $U_q(\mathfrak{sl}_2)$. Our main result is an algebra injection from Δ into a relative of $U_q(\mathfrak{sl}_2)$; the relative is obtained from $U_q(\mathfrak{sl}_2)$ by adjoining three mutually commuting indeterminates. We describe the injection using the equitable presentation of $U_q(\mathfrak{sl}_2)$

Comments: misprint in Lemma 7.1 is corrected
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