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Finite-dimensional simple modules over quantised Weyl algebras. (English) Zbl 0923.16005

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The quantised Weyl algebra $A_n^{\bar{q},\Lambda}$ is an iterated skew polynomial ring in $2n$ indeterminates x_i and y_i, $1 \leq i \leq n$, involving parameters q_i, $1 \leq i \leq n$, and λ_{ij}, $1 \leq i < j \leq n$, which reduces to the usual Weyl algebra A_n when all the parameters are set equal to 1. It can be interpreted in terms of q_i-difference operators on a quantum space determined by the λ_{ij}'s and has been studied from the ring theoretical point of view by, among others, *J. Alev* and *F. Dumas* [J. Algebra 170, No. 1, 229-265 (1994; Zbl 0820.17015)], and the reviewer [J. Algebra 174, No. 1, 267-281 (1995; Zbl 0833.16025)]. Here, using a result on the case $n = 1$ due to the reviewer [J. Pure Appl. Algebra 98, No. 1, 45-55 (1995; Zbl 0829.16017)], the author classifies the finite-dimensional simple $A_n^{\bar{q},\Lambda}$-modules when q_1 is not a root of unity and either each $\lambda_{ij} = 1$ or, for each $j \geq 2$, neither λ_{1j} nor $q_1\lambda_{1j}$ is a root of unity or $n = 2$.

Reviewer: D.A.Jordan (Sheffield)

MSC:

16D60 Simple and semisimple modules, primitive rings and ideals in associative algebras

16S36 Ordinary and skew polynomial rings and semigroup rings

17B37 Quantum groups (quantized enveloping algebras) and related deformations

Keywords:

simple modules; quantised Weyl algebras; skew polynomial rings

Full Text: DOI

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