

1058-05-258

Brendon Rhoades* (brhoades@math.mit.edu), Department of Mathematics, Massachusetts Institute of Technology, Cambridge, MA 02139. *The cluster and dual canonical bases of $\mathbb{Z}[x_{11}, \dots, x_{33}]$ are equal.*

The polynomial ring $\mathbb{Z}[x_{11}, \dots, x_{33}]$ has a basis called the dual canonical basis whose quantization facilitates the study of representations of the quantum group $U_q(\mathfrak{sl}_3(\mathbb{C}))$. On the other hand, the ring $\mathbb{Z}[x_{11}, \dots, x_{33}]$ inherits a basis from the cluster monomial basis of a geometric realization of the type D_4 cluster algebra. We prove that these two bases are equal. This extends work of Skandera and proves a conjecture of Fomin and Zelevinsky. (Received February 16, 2010)