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Susan J Sierra*, s.sierra@ed.ac.uk. *Chain conditions and growth in enveloping algebras of infinite-dimensional Lie algebras.*

Let W be the Witt algebra, the Lie algebra of derivations of the complex affine line. We show that, although the universal enveloping algebra $U(W)$ of W , has infinite GK-dimension, any proper quotient of it has polynomial growth: that is, $U(W)$ has *just infinite GK-dimension*. We prove similar statements for the enveloping algebras of several related Lie algebras. This is joint work with Natalia Iyudu.

In 2013 we proved with Walton that $U(W)$ is neither left or right noetherian by constructing a non-noetherian factor ring. This factor, however, satisfies the ascending chain condition on two-sided ideals. Our work with Iyudu provides supporting evidence for the conjecture that $U(W)$ itself has ACC on two-sided ideals, and if time permits we will discuss other evidence in favour of this conjecture. (Received March 02, 2020)