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Michael K Lau* (mlau@uwindsor.ca), University of Windsor, Dept. of Math and Stats, 401 Sunset Ave., Windsor, Ontario N9B 3P4, Canada. *Representations of Multiloop Algebras.*

Multiloop algebras and their extensions have recently appeared in a variety of algebraic, geometric, and physical contexts, including extended affine Lie algebras, toroidal symmetries, and twisted current algebras. They are multivariable generalizations of the loop algebras appearing in affine Kac-Moody theory.

An untwisted multiloop algebra is simply a Lie algebra of polynomial maps from an N -torus to a finite-dimensional simple Lie algebra L . Twisted multiloop algebras are fixed point subalgebras determined by any family of N commuting finite-order automorphisms of L . In this talk, we describe the finite-dimensional simple modules of all (twisted and untwisted) multiloop algebras. These modules can be classified up to isomorphism by equivariant maps on N -tori. (Received February 09, 2009)