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Chad R Mangum* (cmangum@niagara.edu). *Bosonic Free Field Representations of Twisted Toroidal Lie Algebras.*

Lie algebra representation theory has been significant in various areas of mathematics and physics for several decades. In this talk, we will discuss one instance of this theory, namely certain representations of twisted (2-)toroidal (Lie) algebras, which we view as universal central extensions of twisted multi-loop algebras. The usual loop algebra realization generalizes the familiar realization of affine Kac-Moody algebras. To facilitate our study of the representation theory, however, we will discuss a new realization given by generators and relations; this is similar to a realization by Moody, Rao, and Yokonuma in the untwisted case. Subsequently, we will discuss an application, namely bosonic free field representations, which are similar to those of Feingold and Frenkel in the case of affine algebras. (Received January 03, 2019)