

GEOMETRIC AND ASYMPTOTIC GROUP THEORY  
WITH APPLICATIONS  
2016

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*'Arithmetic' constructions of hyperbolic Kac-Moody groups*

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*Abstract:*

Tits defined Kac-Moody groups over commutative rings, providing a hint as how one may give infinite dimensional analogues of the Chevalley-Demazure group schemes. Tits' presentation can be simplified considerably when the Dynkin diagram is hyperbolic and simply laced. In joint work with Daniel Allcock, we have obtained finitely many generators and defining relations for simply laced hyperbolic Kac-Moody groups over  $\mathbb{Z}$ . We compare this presentation with a representation theoretic construction of Kac-Moody groups over  $\mathbb{Z}$ . We also present some preliminary results about uniqueness of representation theoretic hyperbolic Kac-Moody groups.