

# Lethbridge Number Theory and Combinatorics Seminar

Monday — June 24, 2019

Room: C630

Time: noon to 1:00 p.m.

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# Classification of some three-dimensional vertex operator algebras

Vertex operator algebras (VOAs) as discussed in this talk are graded complex vector spaces with a collection of many bilinear operations satisfying some intricate identities. They first arose in mathematics and physics via the study of string theory and conformal field theories, in the study of the Monster group and moonshine, and in the study of the representation theory of affine Lie algebras. From their inception it has been known that VOAs are deeply connected with the theory of modular forms.

In this talk we will explain how results on vector valued modular forms can be used to classify VOAs satisfying certain finiteness conditions. Our classification for VOAs with exactly three simple representations rests on using arithmetic properties of a family of modular forms expressed in terms of generalized hypergeometric series. The classification of the integral specializations of this family relies on properties of the monodromy, and on results on distributions of primes in arithmetic progressions. No prior familiarity with VOAs will be assumed, and we will focus primarily on the number theoretic aspects of the problem.

**EVERYONE IS WELCOME!**

Visit the seminar web page at  
<http://www.cs.uleth.ca/~nathanng/ntcoseminar/>



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