



## Online ISU Algebra Seminar

**Date and Time:** April 7<sup>th</sup>, 2022 from noon to 12:50 pm.

**Speaker:** Kailash C. Misra, Ph.D. (North Carolina State University)

**Title:** Multiplicities of Maximal weights of some affine Lie algebra modules

**Abstract:** The vector space of trace zero matrices is a simple Lie algebra under the multiplication. The affine Lie algebra is a one-dimension central extension of the loop algebra. We consider the irreducible highest weight  $\lambda$ -module  $L(\lambda)$  with highest weight  $\lambda$ . The weights of this module can be thought of as certain generalized eigenvalues and the corresponding eigenspaces are called weight spaces whose dimension is called the multiplicity of the corresponding weight. Using combinatorics of crystal bases and the RSK correspondence we will study the multiplicities of certain weights called maximal dominant weights. In particular, we will show that these multiplicities are equal to the number of certain patterns avoiding permutations.

**About Speaker:** Kailash Misra, Ph. D. is a full professor at Department of Mathematics, North Carolina State University (NCSU). His research interests are in Kac-Moody Lie algebra representations, representations of quantum affine algebras, crystal bases and their applications, and vertex operator representations.

In addition, Professor Misra is a fellow of American Mathematical Society since 2014 and a member of NCSU Academy of Outstanding Teachers since 2004. He is a member of editorial boards for Communications in Algebra (1995-present), Proceedings of American Mathematical Society (2011- 2019), Contemporary Mathematics, AMS (2012-2022) and Bulletin of the Iranian Mathematical Society (2017-present).

## Zoom Meeting Information

Join Zoom Meeting

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Meeting ID: 916 7189 1930

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