

Colloquium

University of Notre Dame
Department of Mathematics

Gus Schrader - Columbia University

Speaker: Gus Schrader

Columbia University

Will give a lecture entitled

Moduli spaces of vacua, cluster varieties and representation theory

Date: Thursday, January 28, 2021

Time: 3:00 PM

Location: Zoom

Zoom URL: notredame.zoom.us/j/98688096824?pwd=bWxaSnJpdDhMRE9yZk4va3N2QlBydz09



Abstract:

My talk will focus on certain complex algebraic varieties arising from physics as 'moduli spaces of vacua' in supersymmetric quantum field theories. Two important classes of theories in which these moduli spaces can be given a rigorous mathematical definition are the theories of 'class S' (associated to a topological surface together with a simple Lie group), and the 'quiver gauge theories' (associated to a quiver and a dimension vector). In both cases, the coordinate ring of the moduli space can be deformed to a non-commutative algebra, and many algebras of interest in representation theory, such as quantized universal enveloping algebras and double affine Hecke algebras arise in this fashion. In the case of class S theories, Fock and Goncharov showed that these moduli spaces can be understood as cluster varieties, leading to many important applications in quantum topology and higher Teichmuller theory. I'll report on joint work with A. Shapiro in which we provide a similar cluster description in the quiver gauge theory case, and describe applications of our results to understanding the discrete symmetries of the moduli spaces, and to the representation theory of their non-commutative deformations.