Mathematical Physics Seminar, Gus Schrader, Northwestern University, REC 225 and Zoom

Wednesday, Apr 20th 1:30 - 2:30pm

Title: Whittaker Functions for Quantum Groups

Abstract: In one of the first applications of representation theory to quantum integrability, Kostant showed in the 1970's that the classical Whittaker functions for split real Lie groups are eigenfunctions for quantum Toda chains. These Whittaker functions admit a q-deformation -- now associated to split real quantum groups -- which are eigenfunctions for the q-difference analogs of the Toda chains. These q-deformed Whittaker functions have turned out to have applications across different areas of mathematics and physics: they govern the decomposition of a tensor product of principal series representations of the split real quantum group into irreducibles, provide the key to the proof of the modular functor conjecture in quantum higher Teichmuller theory, and they encode the BPS spectrum of supersymmetric quiver gauge theories. I will survey these results, and explain how they arise from the cluster-algebraic construction of the Toda chain and its eigenfunctions.

Zoom Link:available at https://www.math.purdue.edu/~ebkaufma/seminar.html