Speaker: Linhui Shen (Michigan State University)
Modality: Zoom, see link at https://www.math.purdue.edu/~ebkaufma/seminar.html
When: 1.30-2.30pm, Tue Sept 24

Title: Cluster Nature of Quantum Groups

Abstract: We present a rigid cluster model to realize the quantum group $U_q(g)$ for g of type ADE. We prove that there is a natural Hopf algebra isomorphism from the quantum group to a quotient algebra of the Weyl group invariants of a Fock-Goncharov quantum cluster algebra. Applying the quantum duality of cluster algebras, we show that the quantum group admits a cluster canonical basis Θ whose structural coefficients are in $\mathbb{N}[q^{\frac{1}{2}}, q^{-\frac{1}{2}}]$. The basis Θ satisfies an invariance property under the braid group action, the Dynkin automorphisms, and the star anti-involution.