

# Colloquium

University of Notre Dame  
Department of Mathematics

**Speaker:** Pavlo Pylyavskyy

University of Minnesota

**Will give a lecture entitled**

Zamolodchikov periodicity and integrability

**Date:** Wednesday, November 7, 2018

**Time:** 4:00 PM

**Location:** 117 Hayes-Healy Hall

**Departmental Tea:** Tea in Room 257 (lounge in Hurley Hall) at 3:30 p.m.



**Abstract:**

T-systems are certain discrete dynamical systems associated with quivers. They appear in several different contexts: quantum affine algebras and Yangians, commuting transfer matrices of vertex models, character theory of quantum groups, analytic Bethe ansatz, Wronskian-Casoratian duality in ODE, gauge/string theories, etc. Periodicity of certain T-systems was the main conjecture in the area until it was proven by Keller in 2013 using cluster categories. In this work we completely classify periodic T-systems, which turn out to consist of 5 infinite families and 4 exceptional cases, only one of the infinite families being known previously. We then proceed to classify T-systems that exhibit two forms of integrability: linearization and zero algebraic entropy. All three classifications rely on reduction of the problem to study of commuting Cartan matrices, either of finite or affine types. The finite type classification was obtained by Stembridge in his study of Kazhdan-Lusztig theory for dihedral groups, the other two classifications are new. This is joint work with Pavel Galashin.

