

## ***GRADUATE STUDENT SEMINAR***

**Guest Speaker: Pavel Mnev**  
**University of Notre Dame**

**Date:** Monday, April 19, 2021

**Time:** 4:15 PM

**Location:** Zoom

**Zoom URL:** [notredame.zoom.us/j/95815357423](https://notredame.zoom.us/j/95815357423)



***Lecture Title:***

**Topological quantum mechanics, Stasheff's associahedra and homotopy transfer of algebraic structures**

***Abstract***

I will explain the setup of topological quantum mechanics and how its natural extension to spacetimes being metric trees leads to the construction of a family of differential forms  $I_n$  on the moduli space of metric trees (a.k.a. Stasheff's associahedron). Periods of these differential forms give the Kontsevich-Soibelman sum-over-trees formula for the  $A_\infty$  algebra structure on the cohomology of a differential graded algebra (e.g. Massey operations on de Rham cohomology). Higher associativity relations for the  $A_\infty$  structure correspond in this construction to the factorization property of the differential forms  $I_n$  on the compactification strata of the moduli space.