



# GEOMETRY, TOPOLOGY, AND PHYSICS SEMINAR

## Introduction to 3D Quantum Gravity and Organizational Meeting: All Welcome!

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Friday, January 20, 2017, 4:00 p.m.  
Room 6635 South Hall

**Abstract:** 3D pure quantum gravity with negative cosmological constant serves as a toy model for the conceptual understanding of quantum gravity and suggests the profound “volume conjecture”. This quarter, the seminar will focus on three salient features of 3D pure quantum gravity with negative cosmological constant:

- The relation between 3D gravity and Chern-Simons gauge theory, especially the subtlety about invertibility of vielbeins,
- The existence of BTZ (Banados-Teitelboim-Zanelli) black holes, and
- The asymptotic Virasoro algebra discovered by Brown and Henneaux, which is a precursor of the AdS/CFT correspondence.

The goal is to gain a better understanding of those facts, rather than present original research.

This seminar is part of the NSF/UCSB ‘Research Training Group’ in Topology and Geometry. Information about future meetings can be found at <http://www.math.ucsb.edu/~drm/GTPseminar/>