



## GEOMETRY, TOPOLOGY, AND PHYSICS SEMINAR

# Enumerating and exploring the sets of elliptic Calabi-Yau threefolds and fourfolds

Washington Taylor  
MIT

Friday, November 6, 2015, 4:00 p.m.  
Room 6635 South Hall

**Abstract:** Recent work motivated by physics has led to progress in understanding elliptic Calabi-Yau threefolds and fourfolds, using new mathematical and computational tools for analyzing the geometry of the bases that support such fibrations. This talk will give a tour of some of the highlights of this research program, including a systematic approach to enumerating elliptic Calabi-Yau threefolds with large  $h^{2,1}$ , a Monte Carlo study of  $\sim 10^{50}$  distinct threefold bases that support elliptic Calabi-Yau fourfolds, and applications to physics including hints at how the observed standard model of particle physics may emerge from “typical” features of Calabi-Yau fourfolds.

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/>