



*Institute of Mathematical Research  
Department of Mathematics*

## **GEOMETRY SEMINAR**

# **Modular forms, string<sup>c</sup> structure, mod 2 Witten genus and generalized Hohn-Stolz conjecture**

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### **Abstract**

The Witten genus is the loop space analogue of the Hirzebruch A-hat genus. On a string manifold, the Witten genus is a level 1 modular form over  $SL(2, \mathbb{Z})$ . The homotopy refinement of the Witten genus leads to the theory of topological modular forms. In this talk, I will discuss two extensions of the original Witten genus. We construct generalized Witten genera on a kind of  $\text{spin}^c$  manifolds, which we call string<sup>c</sup> manifolds and the generalized Witten genera become a level 1 modular form over  $SL(2, \mathbb{Z})$  on a string<sup>c</sup> manifold. The other one is the mod 2 extension. Hohn and Stolz conjectured that existence of a positive Ricci curvature metric on a string manifold implies the vanishing of the Witten genus. We present vanishing results for these generalized Witten genera on complete intersections and describe a possible mod 2 extension of the Hohn-Stolz conjecture. The talk is based on the joint work with Fei Han and Weiping Zhang.

**Date:** August 1, 2011 (Monday)

**Time:** 4:00 – 5:00pm

**Place:** Room 210, Run Run Shaw Bldg., HKU

*All are welcome*