The Hong Kong University of Science and Technology

Department of Mathematics

<u>Hong Kong Geometry Colloquium</u>

Higher-genus reconstruction in Gromov--Witten theory

By

Prof. Todor Milanov

Institute for the Physics and Mathematics of the Universe, Tokyo

<u>Abstract</u>

Gromov--Witten invariants are certain virtual count of the number of holomorphic curves in a given compact Kahler manifold satisfying various incidents constraints. Although, in general, they are very difficult to compute, the cases in which we can find them the answer is quite spectacular: one can give it either in terms of differential equations and representations of infinite dimensional Lie algebras, or by means of (quasi-)modular forms.

In most of my talk I would like to talk about the main ideas involved in a certain conjecture of Givental, proved by Teleman. Namely, if the manifold has sufficiently many rational curves, one can express the higher genus GW invariants in terms of genus-0 and the higher genus GW invariants of the point. My second goal is to explain one possible application of this formalism, based on my joint work with Y. Ruan and Y. Shen. We proved that the GW invariants of the elliptic orbifold $\mathbf{P}^1$ are quasi-modular forms.

Date : *Saturday, 6 October 2012*
Time : *10:00a.m.-11:00a.m.*
Venue : *Room 4504, Academic Building*
(near Lifts 25 & 26), HKUST

Moduli spaces of framed sheaves, partition functions and enumerative invariants

By

Prof. Ugo Bruzzo

The International School for Advanced Studies (SISSA), Trieste

<u>Abstract</u>

I will review some general facts about moduli spaces of framed sheaves: their construction, how they relate to moduli spaces of instantons, and how they can be used to compute partition functions of topological quantum field theories. I will also hint how there partition functions can help in the computation of enumerative invariants.

Date : *Saturday, 6 October 2012*
Time : *11:20a.m.-12:20a.m.*
Venue : *Room 4504, Academic Building*
(near Lifts 25 & 26), HKUST

All are welcome !
Light refreshment will be provided at Room 3493 from 11:00 am to 11:20 am