Program of the Colloquium

Venue: JinLongTan Hotel 3rd Floor(金龙潭大饭店 3 层)

September 12, 2015 Morning

Title: Elliptically fibered Calabi-Yau manifolds and the ring of weak Jacobi forms

Speakers: Albrecht KLEMM (Univ. of Bonn) and Minxin HUANG (USTC)

Time: 9:30-10:30; 11:00-12:00; Tea break: 10:30-11:00

Abstract:

We give evidence that the all genus amplitudes of topological string theory on compact elliptically fibered Calabi-Yau manifolds can be written in terms of meromorphic Jacobi forms whose weight grows linearly and whose index grows quadratically with the base degree. The denominators of these forms have a simple universal form with the property that the poles of the meromorphic form lie only at torsion points. The modular parameter corresponds to the fibre class while the role of the string coupling is played by the elliptic parameter. This leads to very strong all genus results on these geometries, which are checked against results from curve counting.

Keywords:

Topological string theory, string compactifications, stable pair invariants, modular forms and black hole entropy

Reference: M. x. Huang, S. Katz and A. Klemm, "Topological String on elliptic CY 3-folds and the ring of Jacobi forms," arXiv:1501.04891 [hep-th]

September 12, 2015 Afternoon

Title: Quivers, Dessins and Calabi-Yau
Speaker: Yang-Hui HE (City Univ., London ; Oxford Univ. and Nankai Uinv.)
Time:14:30-15:30
Abstract:
We discuss how the combinatorics of dimer models on Riemann surfaces encapture a wealth of information about the physics of certain (supersymmetric) gauge theories. The correspondence between the gauge theory, especially those with quiver structure, and the underlying algebraic geometry of its space of vacua, becomes particularly intricate under this light.

Tea break: 15:30-16:00

Title: Painlevé monodromy varieties and quantization
Speaker: Volodya RUBTSOV (Univ. of Angers)
Time:16:00-17:00
Abstract:
We discuss quantum algebras related to affine cubics arising as monodromy data varie ties for confluented Painlevé equations.
We describe some examples of non-commutative cubics unifying the "quantum Painle ve cubics" and cubic superpotentials for 3D (Generalized) Sklyanin algebras. Such general potentials appear in a description of moduli spaces of vacuum states in N=4 supersymmetric Yang-Mills field theory.
The talk is based on my joint work in progress with M. Mazzocco and L. Chekhov.

Title: Parameter-dependent Poisson brackets: from usual to double
Speaker: Volodya RUBTSOV (Univ. of Angers)
Time: 9:30-10:30
Abstract: We study meromorphic solutions of various Yang-Baxter relations and
the corresponding Poisson algebras both usual and double in sense of Van den Bergh.
This is a joint work with A. Odesskii and V. Sokolov.

Tea break: 10:30-11:00

Title: Sporadic and Exceptional
Speaker: Yang-Hui HE (City Univ., London ; Oxford Univ. and Nankai Uinv.)
Time: 11:00-12:00
Abstract:
We study the web of correspondences linking the exceptional Lie algebras E8,7,6 and
the sporadic simple groups Monster, Baby and the largest Fischer group.
We will survey some old observations from the perspective of Moonshine and
representation theory and present some new ones from that of congruence groups and
enumerative geometry.
Based on joint work with John McKay.