Abstracts

Chang, Chi-Ming

Supersymmetric Landau-Ginzburg Tensor Models

Abstract: Melonic tensor model is a new type of solvable model, where the melonic Feynman diagrams dominate in the large N limit. The melonic dominance, as well as the solvability and the IR stability of the model, relies on a special type of interaction vertex, which generically would not be preserved under renormalization group flow. I will discuss a class of 2d N=(2,2) melonic tensor models, where the non-renormalization of the superpotential protects the melonic dominance. Another important feature of our models is that they admit a novel type of deformations which gives a large IR conformal manifold. At generic point of the conformal manifold, all the flavor symmetries (including the O(N)^{q-1} symmetry) are broken and all the flat directions in the potential are lifted. I will also discuss how the operator spectrum and the chaos exponent depend on the deformation parameters.

Huang, Guan

On the growth of Sobolev norms of a stochastic CGL equation with arbitrary space dimensions

Abstract. In this talk, we consider a stochastic CGL equation in an n-cube $K \subset \mathbb{R}^n$, $n \in \mathbb{N}$, under Dirichlet boundary conditions

$$u_t - \nu\Delta u + i|u|^2 u = \sqrt{\nu}\eta(t,x), \quad x \in K, \quad u|_{\partial K} = 0,$$

where $\eta(t,x)$ is a random force that white in time and regular in space. We will show that for $\nu > 0$ small enough, for any initial data, with large probability, the Sobolev norms $\|u(t,\cdot)\|_m$ of the solutions with $m > \max\{\frac{n}{2}, 2\}$ become large at least to the order of $\nu^{-\kappa(n,m)}$ with $\kappa(n,m) > 0$. In particular, one can choose $\kappa(n,m) = \kappa_n m$ with $\kappa_n > 0$ depending only on the space dimension n if either $n = 1, 2$ or $n \geqslant 6$, and or $m \geqslant 3$. This is a joint work with S. Kuksin.

Nawata Satoshi

Modular invariance beyond the ADE classification in 2d CFT

Abstract: By studying the infra-red fixed point of an N=(0,2) Landau-Ginzburg model, we find an example of modular invariant partition function beyond the ADE classification. I will demystify the partition function by investigating the Hilbert space.

Suzuki Ryo

Gauge theory correlators, moduli space and quiver calculus

Abstract: In Gauge/String Duality, non-planar corrections to the correlators of gauge theory correspond to higher-genus corrections to the string worldsheet. I talk on how to study such quantities by finite-group theory and quiver calculus, whose ultimate goal would be to construct "Riemann surfaces" from permutations.

Xie Dan

Mixed hodge structure and Seiberg-Witten theory

Abstract: I will explain the use of Mixed hodge structure in the study of Coulomb branch of a four dimensional N=2 theory, and this gives an extension of Seiberg-Witten theory.

Zhang Ding-xin

LSY systems for CY complete intersections in G/P

Abstract: Lian--Song--Yau introduced a linear PDE system which can be used to describe the variation of cohomology of CY hypersurfaces in a flag variety. Huang--Lian--Yau--Yu considered a variant of this system for CY complete intersections in a projective homogeneous space. I shall explain how to prove a formula (conjectured by HLYY) which interprets the solution spaces of these systems in terms of some cohomology groups. Joint with B. Lian and T.-J. Lee

Zhou Jie

On a class of generalized q-Pochhammer symbols and modular forms

Abstract: q-Pochhammer symbols has been playing an increasing important role in the studies of enumerative algebraic geometry and physics in the last few decades.
In this talk I will focus on a special class of generalized q-Pochhammer symbols and relate them to Jacobi forms. The idea is to relate the difference equations satisfied by them to the automorphy factors defining sections of certain vector bundles on the Tate curve. If time permits, I will also mention briefly the passage from q-Pochammer symbols to ordinary Pochammer symbols from the view point of formal group law. Geometrically this passage is the degeneration limit from the Tate curve to a nodal P1 and is what underlies the computations involving the "q goes to 1" limit. The talk is based on a work in progress.