SCGP Events - website

Events for:
Monday, March 18th - Friday, March 22nd

Monday, March 18th

9:00am **Takuro Mochizuki - SCGP 102**

Speaker: Takuro Mochizuki

Title: Kobayashi-Hitchin correspondences for periodic monopoles

Abstract:

10:00am **Coffee Break - SCGP cafe**

10:30am **Ron Donagi - SCGP 102**

Speaker: Donagi

Title: Hitchin, Calabi-Yau and Mukai integrable systems.

11:30am **Lunch - SCGP cafe**

1:00pm **Laura Fredrickson**

Speaker: Laura Fredrickson

Title: The asymptotic geometry of the Hitchin moduli space

Abstract: Hitchin's equations are a system of gauge theoretic equations on a Riemann surface that are of interest in many areas including representation theory, Teichmuller theory, and the geometric Langlands correspondence. The Hitchin moduli space carries a natural hyperkahler metric. A conjectural description of its asymptotic structure appears in the work of physicists Gaiotto-Moore-Neitzke and there has been a lot of progress on this recently. I will discuss some recent results.

2:00pm **Tea Time - SCGP Lobby**

2:30pm **Steven Rayan - SCGP 102**

Speaker: Steven Rayan

Title: Hyperpolygons and Hitchin systems

Abstract: Hyperpolygon spaces are finite-dimensional hyperkaehler quotients that can be regarded as linearizations of character varieties. As such, they provide a testing ground for many conjectures related to Hitchin systems, including those that make contact with high-energy physics and string theory. In this talk, I will describe ongoing work with each of Laura Schaposnik and Hartmut Weiss on the mirror symmetry and asymptotic geometry, respectively, of hyperpolygon spaces. The former includes a study of branes in hyperpolygon space while the latter includes the construction of a partial compactification of hyperpolygon space.

Tuesday, March 19th

9:00am **Yan Soibelman - SCGP 102**

Speaker: Yan Soibelman

Title: Non-abelian Hodge theory in dimension one, Floer homology and periodic monopoles

Abstract: I am going to expian a conjectural generalization of the non-abelian Hodge theory of Simpson which in dimension one includes not only bundles with connections but also q-difference and elliptic difference equations. The approprite framework is the one of generalized Riemann-Hilbert correspondence for complex symplectic manifolds proposed by Kontsevich and myself, which uses Fukaya categories.

10:00am **Coffee Break - SCGP cafe**

10:30am **Raffaele Savelli - SCGP 102**

Speaker: Raffaele Savelli

Title: Hitchin Systems, T-branes, and Defects

Abstract:

11:30am **Lunch - SCGP cafe**

1:00pm **SCGP Weekly Talk: Tony Pantev - 102**

Title: Mirror symmetry, intersection of quadrics, and Hodge theory

Abstract: I will discuss a construction of the homological mirror correspondence on algebraic integrable systems arising as moduli of flat bundles on curves. The focus will be on non-abelian Hodge theory as a tool for constructing objects in the Fukaya category. I will discuss specific example of the construction building automorphic sheaves on moduli space of bundles that are realized as intersections of quadrics. This is a joint work with Ron Donagi and Carlos Simpson.

2:00pm   **Tea Time - SCGP Lobby**

2:30pm   **Lynn Heller - SCGP 102**

         Speaker: Gukov

         Title: Higher solutions to Hitchin's self-duality equations and Willmore surfaces

         Abstract:

Wednesday, March 20th

9:00am   **Ludmil Katzarkov - SCGP 102**

         Speaker: Ludmil Katzarkov

         Title: PDE's and non commutative motives

         Abstract: In this talk we propose a new type of "Hodge " structure - Central Manifolds. Building an analogy with Nonabeian Hodge theory we propose a notion of motivic PDE. Examples include the usual suspects- Yang Mills Higgs, Mean curvature, Kaehler Einstein equations.

10:00am **Coffee Break - SCGP cafe**

10:30am **Sakura Schafer-Nameki - SCGP 102**

         Speaker: Sakura Schafer-Nameki

         Title: Higgs bundles for M-theory on G2 Manifolds

         Abstract:

11:30am **Lunch - SCGP cafe**

1:00pm   **Dima Arinkin - SCGP 102**

Speaker: Dima Arinkin

Title: Cameral covers and Higgs bundles: additive, multiplicative, and elliptic.

Abstract: Cameral covers, introduced by R.Donagi and D.Gaitsgory, are geometric objects describing the `spectrum' of regular Higgs bundles (in the case of Higgs bundles for the group GL(n), cameral covers are equivalent to the more familiar notion of spectral covers). In my talk, I will extend the theory of cameral covers in two directions: to Higgs fields that need not be regular, and to different kinds of Higgs bundles, such as 'group-valued' Higgs bundles. This allows us to treat in a uniform way various `Higgs bundle-like' objects, such as usual or group-valued Higgs bundles, semistable bundles on an elliptic curve, and perhaps even the space of regular connections on a punctured disk.

2:00pm **Tea Time - SCGP Lobby**

2:30pm **Nikita Nekrasov - SCGP 102**

Speaker: Nekrasov

Title: Tying up instantons with anti-instantons in sigma models

Abstract:

3:30pm **Break**

3:45pm **Sergey Cherkis - SCGP 102**

Speaker: Sergey Cherkis

Title: Compactification of Doubly Periodic Monopole Moduli Spaces

Abstract:

6:00pm **Workshop Banquet**

Thursday, March 21st

9:00am **Greg Moore - SCGP 102**

Speaker: Moore

Title: Categorified Wall-Crossing With Twisted Masses

Abstract: The talk will discuss "categorification," or more accurately, "braneification" of wall-crossing formulae (wcf). We review the general statement of the 2d4d wcf. Then we review and refine the Cecott-Vafa wcf in 2d Landau-Ginzburg models. We further refine it in the context of the A-infinity category of interfaces using ``S-wall interfaces'' for "S-wall-crossing."' Finally, we discuss the effect of twisted masses, which lead to some novel new phenomena, including K-wall interfaces, closely related to Koszul duality of algebras. Most of the talk is a review of work done with D. Gaiotto and E. Witten pre-2015. Some of the material presented comes from unpublished work with T. Dimofte and D. Gaiotto from 2016, together with more recent work in progress with Rutgers graduate student Ahsan Khan.

10:00am **Coffee Break - SCGP cafe**

10:30am **Ruxandra Moraru - SCGP 102**

    Speaker: Ruxandra Moraru

    Title: Moduli spaces of generalized holomorphic bundles

    Abstract:

11:30am **Lunch - SCGP cafe**

1:00pm **Ngo Bao Chau - SCGP 102**

    Speaker: Ngo Bao Chau

    Title: On the Hitchin morphism for higher dimensional varieties

    Abstract:

2:00pm **Tea Time - SCGP Lobby**

2:30pm **Sergei Gukov - SCGP 102**

    Speaker: Gukov

    Title: New TQFTs from Higgs bundles

    Abstract:

Friday, March 22nd

9:00am **Olivia Dumitrescu - SCGP 102**

Speaker: Olivia Dumitrescu

Title: Extension of a theorem of Nagata and geometry of moduli

Abstract: I will introduce a new numerical criterion for extremal rays of the effective cone of blown up projective space at several points. It generalizes a result of Nagata that was established in the context of his solution to Hilbert's 14th problem. For a small number of points, these spaces have the structure of moduli spaces. I will explain their birational geometry. This talk is based on my joint work with Nathan Priddis.

10:00am **Coffee Break - SCGP cafe**

10:30am **Duiliu-Emanuel Diaconescu - SCGP 102**

Speaker: Diaconescu

Title: Wild Character Varities and Donaldson-Thomas invariants

Abstract: This talk will present recent conjectures on cohomological invariants of wild character varieties derived from string theory and enumerative geometry in collaboration with Wu-yen Chuang, Ron Donagi, Satoshi Nawata, Tony Pantev.

11:40am **Steven Bradlow**

Speaker: Steven Bradlow

Title: Higgs bundles and exotic components of surface group representation varieties.

Abstract: Moduli spaces of Higgs bundles on a Riemann surface correspond to representation varieties for the surface fundamental group. For representations into complex semisimple Lie groups, the components of these spaces are labeled by obvious topological invariants. In contrast, for representations into real forms of the complex groups, features other than the obvious invariants lead to the existence of extra `exotic' components which can have special significance. Instances of such exotic components occur in so-called ``higher Teichmuller'' theory, where they have been attributed to one of two distinct mechanisms. We will describe results for $SO(p,q)$-Higgs bundle which reveal new examples outside the scope of these two mechanisms, and which provide evidence for a unifying explanation conjectured by Guichard-Labourie-Wienhard.

12:40pm **Lunch - SCGP cafe**

3:30pm **Tea Time - SCGP Lobby**