

«Synthesis of integrabilities in the context of gauge/string duality» conference schedule

Morning DISCUSSION session, Steklov Mathematical Institute

Monday, 20.09.10	Tuesday, 21.09.10	Wednesday, 22.09.10	Thursday, 23.09.10	Friday, 24.09.10
No morning session on Monday!	11:00-12:15 H.Kanno-I	11:00-12:00 A.Marshakov	11:00-12:00 M.Manabe	11:00-12:00 S.Yanagida
	12:15-13:00 T.Oota	12:00-13:00 K.Ito	12:00-13:00 H.Kanno	12:00-12:45 A.Gorsky
				12:45-13:00 M.Kazaryan
	13:00-14:00 Lunch	13:00-14:00 Lunch	13:00-14:00 Lunch	13:00-14:00 Lunch
	14:00-14:30 T.Oota(continued)	14:00-15:00 S.Sakai	14:00-14:30 A.Sleptsov	14:00-14:30 M.Kazaryan (continued)
	14:30-15:15 Sh.Shakirov-I	15:00-16:00 T.Takebe	14:30-15:00 S. Mironov	14:30-15:15 S.Natanzon*
	15:15-16:00 An. Morozov		15:00-15:30 L.Grechishnikov	15:15-15:40 Sh.Shakirov-II
			15:30-16:00 I.Timiryasov	15:40-16:00 P.Dunin- Barkowski

* = to be confirmed

Please note that morning session is intended for *open discussions* of *previously given* talks.

Afternoon TALKS session, Higher School of Economics

Monday, 20.09.10	Tuesday, 21.09.10	Wednesday, 22.09.10	Thursday, 23.09.10	Friday, 24.09.10
17:00-18:00 A.Marshakov	17:00-18:20 K.Ito	17:00-18:20 M.Manabe	17:00-18:20 S.Yanagida	17:00-18:40 T.Nakatsu
18:00-19:20 H.Kanno-I	18:20-19:40 K.Sakai	18:20-19:40 H.Kanno-II	18:20-19:20 M.Kazaryan	18:40-19:25 A.Smirnov
19:20-20:40 T.Oota	19:40-20:40 T.Takebe	19:40-20:40 A.Gorsky	19:20-20:20 S.Natanzon	19:25-20:10 D.Galakhov
20:40-21:00 Coffee break	20:40-21:00 Coffee break	20:40-21:00 Coffee break	20:20-20:40 Coffee break	20:10-20:30 Coffee break
21:00-21:30 Sh.Shakirov-I	21:00-21:30 A.Sleptsov	21:00-21:30 L.Grechishnikov	20:40-21:30 Sh.Shakirov-II	20:30-21:15 A.Popolitov
21:30-22:00 An. Morozov	21:30-22:00 S. Mironov	21:30-22:00 I.Timiryasov	21:30-22:00 P.Dunin- Barkowski	21:15-22:00 V.Alba

Note that talks on Friday are longer due to the lack of discussion session afterwards, so that additional time can be used for discussions.

Monday:

1. Andrey Marshakov
«Introduction to AGT»
2. Hiroaki Kanno
«ADHM construction and localization formula»
Abstract:
A pedagogical review of the work of Nakajima and Nekrasov.
(Ref : H. Nakajima, Lectures on Hilbert Schemes of Points on Surfaces)
3. Takeshi Oota
«Nekrasov Function and Beta-Deformed Matrix Model of Selberg Type»
Abstract:
Recently, an interesting conjecture has been made by Alday, Gaiotto and Tachikawa on the equivalence of the 4d Nekrasov function and the 2d conformal block. The Dotsenko-Fateev multiple integral for the four-point conformal block can be treated as a certain beta-deformed matrix model which is a perturbed double Selberg integral. Using the AGT relation, the beta-deformed matrix model can serve as a generating functions of q-expansion coefficients for the Nekrasov function of SU(2) gauge theory with $N_f=4$ flavors. A formula associated with the Jack polynomials is useful to calculate the expansion coefficients. We also consider a series of massive scaling limits of the matrix model which reduce the number of flavors to $N_f=3$ and subsequently to $N_f=2$.
(Ref: H. Itoyama and T.O., arXiv: 1003.2929 [hep-th];
H. Itoyama, T.O. and N. Yonezawa, arXiv: 1008.1861 [hep-th].)
4. Shamil Shakirov
5. Andrei Morozov

Tuesday:

1. Katsushi Ito
«TBA equations for minimal surfaces in AdS₃»
Abstract :
We study classical open string solutions with a null polygonal boundary in AdS₃ in relation to gluon scattering amplitudes in N=4 super Yang-Mills at strong coupling. We derive in full detail the set of integral equations governing the decagonal and the dodecagonal solutions and identify them with the thermodynamic Bethe ansatz equations of the homogeneous sine-Gordon models.
By evaluating the free energy in the conformal limit we compute the central charges, from which we observe general correspondence between the polygonal solutions in AdS_n and generalized parafermions.
2. Kazuhiro Sakai:
«Solving thermodynamic Bethe ansatz equations for gluon scattering amplitudes»
Abstract:
Alday and Maldacena proposed a method of computing gluon scattering amplitudes in N=4 super Yang-Mills at strong coupling by using the AdS/CFT correspondence. The amplitude is given by the area of a minimal surface in AdS₅ with a null polygonal boundary. Recently, it turned out that minimal surfaces corresponding to the general n-point amplitudes are characterized in terms of a sort of Thermodynamic Bethe Ansatz (TBA) equations. After reviewing the general TBA description, we focus on the case of n=6 and analyze the solution detail. We explain how to solve the TBA equations perturbatively and compute the amplitude by making use of the underlying integrable model.
(Based on a collaboration with Y. Hatsuda, K. Ito and Y. Satoh; arXiv:1005.4487 [hep-th].)
3. Takashi Takebe
« $\hbar$ -expansion of KP hierarchy: Recursive construction of solutions»
Abstract:
This is a talk based on the work in collaboration with K. Takasaki, arXiv:0912.4867. The $\hbar$ -dependent KP hierarchy is a formulation of the KP hierarchy that depends on the Planck constant $\hbar$ and reduces to the dispersionless KP hierarchy as $\hbar \rightarrow 0$. A

recursive construction of its solutions on the basis of a Riemann-Hilbert problem for a quantised canonical transformation is presented. We also give recursion relations for the $\hbar$ -expansions of the wave function $\Psi = \exp(\hbar^{-1} S_0 + \hbar S_1 + \hbar^2 S_2 + \dots)$ and the tau function $\tau = \exp(\hbar^{-2} F_0 + \hbar^{-1} F_1 + F_2 + \dots)$.

4. Alexei Sleptsov
5. Sergei Mironov

Wednesday:

1. Masahide Manabe

Title:

«Surface Operator, Topological B-model, and Topological Recursion»

Abstract:

Recently, as an extension of AGT relation, it was argued that a surface operator in four dimensional supersymmetric gauge theory with eight supercharges corresponds to a degenerate primary operator in two dimensional CFT. We discuss and check this correspondence from a viewpoint of topological B-model. In the topological B-model, spectral invariants are defined on Seiberg-Witten curve and mirror curve by the Eynard-Orantin's topological recursion relation. We state a relation between the two types of spectral invariants.

(Based on a collaboration with H. Awata, H. Fuji, H. Kanno and Y. Yamada; arXiv 1008.0574 [hep-th])

2. Hiroaki Kanno

«Instanton counting with surface operator and open topological string»

Abstract:

We compute the instanton partition function in the presence of the surface operator by the localization formula on the moduli space, which is called the affine Laumon space in mathematics. For $SU(2)$ theories we find an exact agreement with CFT correlation functions with a degenerate operator insertion. We also argue that the K theory (or five dimensional) lift of the partition function gives open topological string amplitudes on local Hirzebruch surface and its blow ups, which is regarded as a geometric engineering of the surface operator. (Based on a collaboration with H.

Awata, H. Fuji, M. Manabe and Y. Yamada; arXiv 1008.0574 [hep-th])

3. Alexander Gorsky
«Remarks on AGT correspondence»
4. Leonid Grechishnikov
5. Inar Timiryasov

Thursday:

1. Shintaro Yanagida

«AGT conjecture and Zamolodchikov-type recursive formula»

Abstract:

In this talk I shall explain a strategy of the proof of Gaiotto conjecture (pure gauge version of $SU(2)$ AGT conjecture).

It is based on the Zamolodchikov-type recursive formula, which goes back to the classical observation of the conformal block by Al. Zamolodchikov in 1984.

It is also related to the norm of degenerate field in Liouville theory.

I shall discuss a combinatorial approach for the counting of zero's of the degenerate field's norm.

2. Maxim Kazaryan
3. Sergey Natanzon
4. Shamil Shakirov
5. Petr Dunin-Barkowski

Friday:

1. Toshio Nakatsu
2. Andrey Smirnov

3. Dmitry Galakhov
4. Alexander Popolitov
5. Vasyl Alba