# Workshop on Integrable Systems, Random Matrices, Algebraic Geometry and Geometric Invariants

Mon 7 February - Thu 10 February,
Steklov Mathematical Institute, room 430

Организаторы:
Чехов Л.О. (МИРАН), Казарян М.Э. (МИРАН), Такебе Т. (ВШЭ)

Спонсоры: РФФИ-JSPS

Из Японии приедут T.Shiota, Y.Numata, S.Kondo и A.Ikeda.

Проф. Я. Нумата (Yasuhide Numata) сделает ещё один дополнительный доклад про компьютерные софты для математического исследования (в 17.30, 09.02.11, ком.317-319, на факультете математики Высшей Школы Экономики).

Желающие посетить какие-нибудь доклады или обсуждения, пожалуйста, присылайте ФИО Т.Такебе на ttakebe@hse.ru (при этом, ясно укажите куда, т.е., в Институт Стеклова и/или в ВШЭ).

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**Monday, 7 February:**
14:30 - 15:30     T. Shiota: The soliton equations and the Riemann-Shottky problem
15:40 - 16:40     A. Orlov: CKP Hierarchy, Bosonic Tau Function and Bosonization Formulae
16:50 - 17:50     A. Zabrodin: dispersionless Toda/KP and Laplacian growth

**Tuesday, 8 February:**
14:30 - 15:30     Y. Numata: On combinatorial formulas for moments of the Wishart distributions.
15:40 - 16:40     L. Rybnikov: TBA

**Wednesday, 9 February:**
14:30 - 15:30     S. Kondo: Expressions of local L factors and epsilon factors in terms of Hecke eigenvalues
15:40 - 16:40     S. Gorchinsky: Polar homology

**Thursday, 10 February:**
14:30 - 15:30     A. Mironov: TBA
15:40 - 16:40     A. Ikeda: The correspondence between Frobenius algebra of Hurwitz numbers and matrix models
16:50 - 17:50     L. Chekhov: TBA

# Abstracts

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**S. Gorchinsky: Polar homology**
The talk is based on a joint work with A.Rosly. We discuss new complexes that compute cohomology groups of locally free sheaves on smooth algebraic varieties in characteristic zero. These complexes are algebro-geometric analogs of singular complexes for real smooth manifolds and have arised from E.Witten's program of holomorphic Chern-Simons theory.

**Y. Numata: On combinatorial formulas for moments of the Wishart distributions.**
We consider the real and complex noncentral Wishart distributions. The moments of these distributions are shown to be expressed as weighted generating functions of graphs associated with the Wishart distributions. We give some bijections between sets of graphs related to moments of the real Wishart distribution and the complex noncentral Wishart distribution. By means of the bijections, we see that calculating these moments of a certain class the real Wishart distribution boils down to calculations for the case of complex Wishart distributions.

**A. Orlov: CKP Hierarchy, Bosonic Tau Function and Bosonization Formulae**
We develop the theory of CKP hierarchy introduced in the papers of Kyoto school \cite{DJKM-CKP} (see also \cite{Kac-Leur}). We present appropriate bosonization formulae. We show that in the context of the CKP theory certain orthogonal polynomials appear. These polynomials are polynomial both in even and odd (in Grassmannian sense) variables.

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## Семинар
## Высшая Школа Экономики, Факультета Математики, ул. Вавилова 7, ком 317-319.
## 17.30 - 18.00 (или подольше)

**Y. Numata: KNOPPIX/Math --- a DVD-bootable Linux with mathematical softwares and documents**
KNOPPIX is one of distributions of DVD-bootable Linux. Our project, KNOPPIX/Math (http://www.knoppix-math.org/), is a project to archive free mathematical softwares and documents and offer them on the original KNOPPIX. It provides a desktop for mathematicians that can be set up easily and quickly.

Prof. Numata привезёт DVD диски с этими программами из Японии и даст их слушателям семинара БЕСПЛАТНО!