Mathematical Institute SANU (Belgrade) Regular and Chaotic Dynamics Steklov Mathematical Institute RAS Institute of Computer Science (Moscow–Izhevsk)

INTERNATIONAL CONFERENCE GEOMETRY, DYNAMICS, INTEGRABLE SYSTEMS

PROGRAMME





2–7 September 2008 Belgrade, Serbia

Organizers and Editors: V. V. Kozlov, V. Dragović, A. Borisov

Tuesday, September 2

10:00 – 11:00 **Opening ceremony**

Openning Session

- 11:10 11:50 Valery Kozlov: TOPOLOGY OF REAL ALGEBRAIC CURVES
 11:50 – 12:30 Boris Dubrovin: DEFORMATIONS OF INTEGRABLE HIERARCHIES
- 12:30 13:30 **Coctail**

- 16:00 16:35 **Hamad Yehia:** CLASSIFICATION OF INTEGRABLE 2D MECHANICAL SYSTEMS WITH A SECOND POLYNOMIAL INVARIANT. REALITY OR ILLUSION?
- 16:40 17:15 Anatol Odzijewicz: INTEGRABLE BANACH HAMILTONIAN SYSTEMS OBTAINED BY INDUCTION AND COINDUCTION
- 17:15 17:45 **Coffee break**
- 17:45 18:20 **Vered Rom-Kedar:** ON PARABOLIC RESONANCES
- 18:25 19:00 **Jean-Claude Zambrini:** STOCHASTIC DEFORMATION OF ELEMENTARY DYNAMICAL SYSTEMS

Wednesday, September 3

Morning Session

- 09:00 09:35 Sergio Benenti: TWO USEFUL MANIPULATIONS OF THE LAGRANGE EQUATIONS
- 09:40 10:15 Alexey Borisov: ON EXPLICIT INTEGRATION OF TWO NON-HOLONOMIC PROBLEMS
- 10:20 10:55 **Stefan Rauch-Wojciechowski:** WHAT DOES IT MEAN TO EXPLAIN THE MOTION OF THE TIPPE TOP?
- 10:55 11:25 **Coffee break**
- 11:25 12:00 Francesco Fassò: IS THERE A NONHOLONOMIC NOETHER THEOREM?
- 12:05 12:40 **Ivan Mamaev:** A NEW MODEL FOR ROLLING MOTION OF A BODY

- 16:00 16:35 Alexey Bolsinov: INTEGRABLE SYSTEMS ON so(n) AND GEODESICALLY EQUIVALENT METRICS
- 16:40 17:15 **Vladimir Dragović:** INTEGRABLE BILLIARDS AND PONCELET PORISMS: FROM PENCILS OF QUADRICS TO HYPERELLIPTIC JACOBIANS AND BACK
- 17:15 17:45 **Coffee break**
- 17:45 18:20 Alain Albouy: ON "TWO QUADRATIC FIRST INTEGRALS IMPLY INTEGRABILITY"
- 18:25 19:00 Andrey Tsiganov: ADDITION THEOREMS AND SUPERINTEGRABLE SYSTEMS
- 20:00 Conference dinner

Thursday, September 4

Excursion: Visit to Viminacium archeological locality and Manasija monastery.

Viminacium

The largest city of Moesia and the capital of Moesia Superior, Viminacium, was formed on the right bank of the river Mlava, close to its confluence with the Danube, near the present-day town of Kostolac. Owing to excellent communications, especially the Danube as well as its tributaries, the Morava, the Mlava and the Pek, Viminacium was of primary strategic importance for the Roman Empire.

Viminacium was founded following long wars against the indigenous population which the Romans waged during the 1st century BC. With the arrival of legion VII Claudia from Dalmatia during 60's and the 70's, the construction of a stone camp in Viminacium commenced. Viminacium quickly grew into a city, witch was made official by declaring it a municipium during the reign of Hadrian, in the year 117. It is mentioned in various inscriptions s MVNICIVM AELIVM VIMINACIVM. A change of the legal status of Viminacium took place during the reign of Gordian III: it became a colony and its inhabitants became full Roman citizens. The consequences of this event are numerous: the land holdings of Viminacium probably expanded to include the whole of Stig and Pincum with the mine. The most significant privilege of a colony was to mint its own coins. Viminacium saw the period of its largest political and economic crisis in the 3rd century. The massive invasions of the Goths and other barbaric tribes from the north-east during the 4th century contributed to general insecurity along this part of Danube. Still, it was only after the attacks of the Huns that these parts would be left ravaged. Viminacium was destroyed and its population was partly enslaved and party displaced. The fortress was reconstructed during Justinian's reign (526–565). Viminacium ceased to exist during the 7th century, under the attacks of the Slavs.

When it was promoted into a colony, in the year 239, during the reign of Gordian III, Viminacium acquired the right to mint its own copper money. The local mint operated from the year 239/240 to 254/255. There were interruptions in the years 248/249 and 253/254, probably due to hindrances in ore supplies to the mint, caused by an unstable military and political situation.

Viminacium coins bore the following inscriptions on the reverse side: P(rovincial) M(oesia) S(uperior), Col(onia) Vim(inacium), and, below: An(no) and the number of local era, from I to XVI, excluding the years X and XV, when no minting took place. As a rule, the reverse featured the motif of a female clad in a long dress with a belt (a personification of Viminacium or the province), holding her hands over a bull and a lion, the symbols of Legion VII Claudia and III Flavia. The observe featured the busts of emperors, wearing a laurel wreath.

Aside from Gordian III, the following rulers also minted the coins in Viminacium: Philip I, Philip II; Otacilia Severa; Trajan Decius; Herennia Etruscilla; Hereninnius Etruscus; Hostilian; Trebonianus Gallus; Volusianus; Aemilian; Valerian I; Mariniana (commemorative) and Gallienus.

Manasija (Resava) monastery

The Manasija monastery was founded by Despot Stefan Lazarević; the church, dedicated to the Holy Trinity, was erected and painted between 1407 and 1418. The monastery is surrounded by massive walls and towers. The frescoes in the church were done by some of the best painters in Byzantine world in the first half of the 15th century.

Since the end of the 17th century Manasija monastery has been assembling educated monks who have fostered literary and copying work, called the Resava School. The literary school of Resava flourished especially in the time of the writer Constantine the Philosopher, one of distinguished scholars of the time. It is worth mentioning that he wrote the biography of Despot Stefan. In that sense Manasija monastery was the base of future higher education in Serbia. Despot Stefan himself was an important renaissance poet.

Already in 1456 Manasija was burnt by the Turks; after 1718, when Austrians took the monastery (and all of northern Serbia), they kept the gunpowder in the narthex, which exploded and blew the ante-church up. A new narthex was built in 1735. At the beginnings of the Serbian revolution, in 1804, the monastery was abandoned and in ruins again. The monastery was partly renewed, between 1807 and 1810, and the restoration works completed in 1845.

Architecturally, the church belongs to the Morava School. The ground plan is in the form of a floral inscribed cross, combined with a trefoil. The twelve-side dome above the central space rests on four free standing pillars. There are one large and two small apses at the eastern end, whereas two large choir conches flank the altar. Four little octagonal domes are situated above the corners of the church. The narthex consists of nine bays. Above the central bay there is yet another dome that rests on four pillars. The church was built on ashlars and thin mortar beds. The facade decoration includes low pilasters, engaged colonettes on the conches and apses, as well as a frieze of small blind arcades on brackets running below the roof cornice. The ornaments have suffered serious damage.

In the inside, the original floor has been preserved in the narthex, made of marble tiles in various colors. Nearly half of the frescoes have been destroyed. Despot Stefan is portrayed with the church model on the left-hand wall. The lower register of the north choir depicts warrior-saints in armor with swords and lances, as an authentic representation of contemporaneous soldiers. The vault above the main door contains a picture of the Souls of the Righteous held by the Divine hand. On the left and right, the prophets David and Solomon are portrayed respectively. There are also 24 portraits of the Old Testament prophets and patriarchs in the spacious dome. Two compositions cover the whole first and second registers in the altar: the first represents the Adoration of the Lamb, the other the Communion of Apostles.

Friday, September 5

Morning Session

- 09:00 09:35 Alexander Bobenko: DISCRETE NONLINEAR HYPERBOLIC EQUATIONS. CLASSIFICATION OF INTEGRABLE CASES
- 09:40 10:15 **Božidar Jovanović:** GEODESIC FLOWS AND NEUMANN SYSTEMS ON STIEFEL VARIETIES
- 10:20 10:55 **Yuri Fedorov:** DISCRETE NEUMANN SYSTEMS ON STIEFEL VARIETIES
- 10:55 11:25 **Coffee break**
- 11:25 12:00 **Milena Radnović:** GEOMETRY OF QUADRICS AND DYNAMICS OF INTEGRABLE BILLIARD SYSTEMS
- 12:05 12:40 **Borislav Gajić:** HIROTA–KIMURA TYPE DISCRETIZATION OF THE CLASSICAL NONHOLONOMIC SUSLOV PROBLEM

Poster Section

15:00 – 16:00 **Poster presentations**

- 16:00 16:35 **Pantelis Damianou:** REDUCTION AND REALIZATION IN TODA AND VOLTERRA
- 16:40 17:15 **Andrey Oshemkov:** SINGULARITIES OF BIHAMILTONIAN SYSTEMS
- 17:15 17:45 **Coffee break**
- 17:45 18:20 **Rade Živaljević:** FULTON–MACPHERSON COMPACTIFICATION, CYCLOHEDRA, AND THE POLYGONAL PEGS PROBLEM
- 18:25 19:00 **Svjetlana Terzić:** COMPLEX COBORDISM CLASSES OF HOMOGENEOUS SPACES
- 21:00 24:00 **Boat trip on Belgrade rivers**

Saturday, September 6

Morning Session

- 09:00 09:35 **Victor Novokshenov:** PADE APPROXIMATIONS OF THE PAINLEVE TRANSCENDENTS
- 09:40 10:15 **Bernard Gaffet:** SPINNING GAS CLOUDS: LIOUVILLE INTEGRABLE CASES
- 10:20 10:55 **Alexander Kilin:** MULTIPLE-PARTICLE SYSTEMS. THE ALGEBRA OF INTEGRALS AND INTEGRABLE CASES
- 10:55 11:25 **Coffee break**
- 11:25 12:00 **Angel Zhivkov:** ON THE DYNAMICS OF THE SOLAR SYSTEM
- 12:05 12:40 **Nikolai Kudryashov:** HIGHER ORDER PAINLEVE EQUATIONS AND SPECIAL POLYNOMIALS ASSOCIATED WITH THEM

- 16:00 16:35 Vladimir Inozemtsev: CLASSICAL INTEGRABILITY OF THE CALOGERO— MOSER SYSTEMS IN EXTERNAL FIELDS
- 16:40 17:15 **Nenad Manojlović:** IZERGIN–KOREPIN TYPE R-MATRICES IN QUANTUM SOLVABLE SYSTEMS
- 17:15 17:45 **Coffee break**
- 17:45 18:20 **Ian Marshall:** POISSON PROPERTIES OF THE SCHROEDINGER EQUATION
- 18:25 19:00 Alina Dobrogowska: INTEGRABLE SYSTEMS COINDUCED FROM BANACH SPACE OF TRACE-CLASS OPERATORS

Sunday, September 7

Morning Session

- 09:00 09:35 Maria Przybylska: DARBOUX POINTS AND INTEGRABILITY OF HOMOGENEOUS HAMILTONIAN SYSTEMS WITH THREE AND MORE DEGREES OF FREEDOM
- 09:40 10:15 Andrzej Maciejewski: JORDAN OBSTRUCTION FOR THE INTEGRABILITY OF HAMILTONIAN SYSTEMS WITH HOMOGENEOUS POTENTIAL
- 10:15 10:45 **Coffee break**

10:45 – 11:20 Sergey Oblezin: GIVENTAL INTEGRAL REPRESENTATION OF WHITTAKER FUNCTION FOR CLASSICAL GROUPS

11:25 – 12:00 Alfredo Herrera-Aguilar: THE INVERSE SCATTERING METHOD AND LIE–BACKLUND SYMMETRIES IN GENERAL RELATIVITY AND STRING THEORY