North-Eastern Federal University named after M.K.Ammosov
Lavrentyev Institute of Hydrodynamics, Siberian Branch of RAS
Sobolev Institute of Mathematics of the Siberian Branch of RAS
Novosibirsk State University

PROGRAM

7th International conference on MATHEMATICAL MODELING

June 30 – July 4, 2014

Yakutsk 2014

CONFERENCE THEMES

Session 1   Nonclassical Problems of Mathematical Physics

Subsession 1.1   Optimal control and dynamic games

Session 2   Discrete Mathematics Methods and Applications

Session 3   Mathematical Modeling and Implementations of Numerical Methods

Session 4   Mathematical Modeling of Northern Territories Problems

Session 5   Session of the Scientific school seminar of physics and mathematics forum "Lenski Kray"

PROGRAM COMMITTEE

<u>Chairperson:</u>

Mikhailova E.I., Dr., Rector of North-Eastern Federal University named after M.K. Ammosov

<u>Deputy chairmen</u>:

Konovalov A.N., Acad. of RAS (IVMMG SB RAS, Novosibirsk),
Goncharov S.S., Corr. Member of RAS (IM SB RAS, Novosibirsk),

Plotnikov P.I., Corr. Member of RAS (IGL SB RAS, Novosibirsk),

Lavrentev M.M., Prof. (NSU, Novosibirsk).

<u>Members</u>:

Alekseev G.V., Prof. (Vladivostok),

Annin B.D., Acad. RAS (Novosibirsk),

Antontsev S., Prof. (Lisbon, Portugal),

Belov Yu.Ya., Prof. (Krasnoyarsk),

Borodin O.V., Prof. (Novosibirsk),

Celikovsky S., Prof. (Prague, Czech),

Chetverushkin B.N., Acad. RAS (Moscow),

Danaev N.T., Acad. NEA of the Republic of Kazakhstan (Almaty, Kazakhstan),

Gao Xin-Lin, Prof. (Dallas, USA),

Goloviznin V.M., Prof. (Moscow),

Guzev M.A., Corr. Member of RAS (Vladivostok),

Ilyichev A.T., Prof. (Moscow),

Ilyin V.A., Acad. RAS (Moscow),

Kabanikhin S.I., Corr. Member of RAS (Novosibirsk),

Kalmenov T.Sh., Acad. NAN of the Republic of Kazakhstan (Almaty, Kazakhstan),

Khludnev A.M., Prof. (Novosibirsk),

Kolokoltsov V.N., Prof. (Warwick University, United Kingdom),

Krumskiy G.F., Acad. RAS (Yakutsk),

Kuzmin A.G., Prof. (Saint-Petersburg),

Larkin N., Prof. (Maringa, Brazil),

Mikhailenko B.G., Acad. RAS (Novosibirsk),

Moiseev E.I., Acad. RAS (Moscow),

Morozov N.F., Acad. RAS (Saint-Petersburg)

Petrushko I.M., Prof. (Moscow),

Podgaev A.G., Prof. (Khabarovsk),

Popivanov N.I., Prof. (Sofia, Bugaria),

Pyatkov S.G., Prof. (Khanty-Mansiysk),

Radkevich E.V., Prof. (Moscow),

Romanko V.K., Prof. (Moscow),

Romanov V.G., Corr. Member of RAS (Novosibirsk),

Ruzhansky M., Prof. (London, United Kingdom),

Sabitov K.B., Corr. Member of AS of the Republic of Bashkortostan (Sterlitamak),

Salahkhitdinov M.S., Acad. of Rep. of Uzbekistan AS (Tashkent, Uzbekistan),

Semenov A.L., Corr. Member of RAS (Moscow),

Shaydurov V.V., Corr. Member of RAS (Krasnoyarsk),

Shirikyan A., Prof. (Paris, France),

Shockin Yu.I., Acad. RAS (Novosibirsk).

Smagin S.I., Corr. Member of RAS (Khabarovsk),

Soldatov A.P., Prof. (Belgorod),

Tani A., Prof. (Yokohama, Japan),

Tartyshnikov E.E., Corr. Member of RAS (Moscow),

Taymanov I.A., Acad. RAS (Novosibirsk),

Tsypkin G.G., Prof. (Moscow),

Voevodin A.F., Prof. (Novosibirsk),

Zikirov O.S., Prof. (Tashkent, Uzbekistan),

ORGANIZING COMMITTEE

Chairman:

Egorov I.E., Prof. (RIM NEFU, Yakutsk)

Deputy Chairmen:

Vabishchevich P.N., Prof. (IPM RAS, Moscow)
Popov S.V., Prof. (IMI NEFU, Yakutsk)

Responsible secretary:

Neustroeva N.V., PhD (NEFU YSU, Yakutsk)

Technical secretary:

Efimova E.S. (IMI NEFU, Yakutsk)

Tikhonova I.M. (RIM NEFU, Yakutsk)

Members:

Afanasyeva V.I., PhD (IMI NEFU, Yakutsk)
Bondarev E.A., Prof. (OGRI SB RAS, Yakutsk)
Vasilyev M.D. (IMI NEFU, Yakutsk)
Grigoryev Yu.M., Dr. (PTI NEFU, Yakutsk)
Ivanov A.A., Prof. (ICRA SB RAS, Yakutsk)
Ivanova A.O., PhD (RIM NEFU, Yakutsk)
Kozhanov A.I., Prof. (IM SB RAS, Novosibirsk)
Lazarev N.P., PhD (RIM NEFU, Yakutsk)
Lebedev M.P., Corr. Member of RAS (YD SB RAS, Yakutsk)
Leverev V.S. (IMI NEFU, Yakutsk)
Mordovskoy S.D., Dr. (IMI NEFU, Yakutsk)
Pavlov S.S., PhD (IMI NEFU, Yakutsk)
Pinigina N.R., PhD (IMI NEFU, Yakutsk)
Popov V.V., PhD (IMI NEFU, Yakutsk)
Potapova S.V., PhD (RIM NEFU, Yakutsk)
Starostin N.P., Dr. (OGRI, SB RAS, Yakutsk)
Troeva M.S., PhD (RIM NEFU, Yakutsk)
Fedorov V.E., PhD (RIM NEFU, Yakutsk)
Fedorov F.M., Dr. (RIM NEFU, Yakutsk)
Shadrina A.I. (IMI NEFU, Yakutsk)

Sharin E.F., PhD (IMI NEFU, Yakutsk)
Antipin V.I. (IMI NEFU, Yakutsk)
Markov V.G. (IMI NEFU, Yakutsk)
Prokopev A.V. (IMI NEFU, Yakutsk)
Nikolaev N.N. (IMI NEFU, Yakutsk)
Popov N.S. (IMI NEFU, Yakutsk)

SCHEDULE

Holding place: NEFU KFEN, 48 Kulakovskogo str., Yakutsk

Monday, June 30th

12.00 – 14.00	Registration	*(2nd floor lobby)*
14.00 – 14.35	Opening session	*(room, 261)*
14.35 – 17.15	Plenary session, Invited Talks	*(room, 261)*
17.15 - 18.45	Lectures	*(rooms, 324, 326, 328)*

Tuesday, July 1th

09.00 – 10.00	Registration	*(2nd floor lobby)*
10.00 – 13.10	Plenary session, Invited Talks	*(room, 261)*
14.30 – 17.15	Parallel session	

Section 1	*(room, 261)*
Subsection 1.1	*(room, 324)*
Section 2	*(room, 353)*
Section 3	*(room, 326)*
Section 4	*(room, 328)*
Section 5	*(room, 330)*

17.15 - 18.45	Lectures	*(rooms, 324, 326, 328)*

Wednesday, July 2th

10.00 – 13.10	Plenary session, Invited Talks	*(room, 261)*
14.30 – 17.30	Parallel session	*(as yesterday)*
20.00 – 20.30	Departure on the ship "Mikhail Svetlov"	
20.30 –21.00	Closing ceremony	*(Conference-hall)*

Thursday, July 3th

Conference-hall
10.00 – 11.30   Plenary session, Invited Talks
11.20 – 12.00   Closing ceremony
15.00 – 19.00   Cultural program

Friday, July 4th   Participants departure

OPENING SESSION

<u>**Monday, June 30th**</u>   **14.00 – 14.35**

E.I. Mikhailova	-	Dr., Rector of North-Eastern Federal University named after M.K. Ammosov, chair of Program committee
M.M. Trofimov	-	Chairman of the State Committee of the Republic of Sakha on innovation policy and science
G.F. Krumskiy	-	counsellor of RAS, Academician of RAS
S.I. Kabanikhin	-	Corresponding Member of RAS, Deputy director of the Institute of Computational Mathematics and Mathematical Geophysics (Computing Center) SB RAS
I.E. Egorov	-	Prof., Director of the Research Institute of Mathematics NEFU

PLENARY SESSIONS

<u>**Monday, June 30th**</u>

Co-chairs Prof. **E.I. Mikhailova,** Prof. **I.E. Egorov**

14.35 – 15.10 *Corresponding Member of RAS S.I. Kabanikhin (Institute of Computational Mathematics and Mathematical Geophysics (Computing Center), SB RAS, Novosibirsk, Russia)* **Investigation of mathematical models by the inverse problems methods**

15.10 – 15.45 *Corresponding Member of RAS N.N. Subbotina (Institute of Mathematics and Mechanics, UB RAS, Ekaterinburg, Russia)* **Analysis of mathematical dynamic models by the help of methods of the theory of optimal control**

<u>**Coffee-break, 20 min**</u>

16.05 – 16.40 *Prof. A. Tani (Department of Mathematics, Keio University, Japan)* **Small-time Solvability of Primitive Equations of the Coupled Atmosphere and Ocean**

16.40 – 17.15 *Prof. A. Hasanoglu (Hasanov), O. Baysal (Department of Mathematics and Computer Science, Izmir University, Uckuyular, Izmir, Turkey)* **Inverse problems related to a Timoshenko beam and applications in engineering sciences**

Tuesday, July 1st

Chair Prof. **A.M. Khludnev**

10.00 – 10.35 *Prof. A.I. Kozhanov (Sobolev Institute of Mathematics of the SB RAS, Novosibirsk, Russia)* **On solvability of some conjugation problems for nonclassical higher order differential equations**

10.35 – 11.10 *Prof. V. Kolokoltsov (Warwick University, Coventry, UK)* **Mean-Field games and their applications**

Coffee-break, 15 min

11.25 – 12.00 *Prof. N. Popivanov (Department of Mathematics and Informatics, University of Sofia, Sofia, Bulgaria)* **Supercritical and critical cases for 2d and 3d BVP for quasilinear equations of mixed elliptic-hyperbolic type**

12.00 – 12.35 *Prof. S. Celykovsky (Institute of Information Theory and Automation, Academy of Sciences of the Czech Republic, Prague, Czech Republic)* **Underactuated Walking Control via the Kinetic Symmetry**

12.35 – 13.10 *Prof. N. Botkin (Center for Mathematics, Technical University of Munich, Munich, Germany)* **Mathematical modeling of physical processes in biology**

Wednesday, July 2nd

Chair Prof. **A.I. Kozhanov**

10.00 – 10.35 *Prof. K.B. Sabitov (Institute of Applied Research of Bashkortostan, Sterlitamak, Russia)* **Coefficient inverse problem for the equations of mixed type**

10.35 – 11.10 *Prof. **S.G. Pyatkov** (Yugra State University, Khanty-Mansiysk, Russia)* **0n some classes of inverse problems for parabolic equations**

Coffee-break, 15 min

11.25 – 12.00 *Prof. **E.V. Radkevich** (M.V. Lomonosov Moscow State University, Moscow, Russia)* **Euler multicomponent system, nonviscous solutions**

12.00 – 12.35 *Prof. **A.P. Soldatov** (Belgorod State National Research University, Belgorod, Russia)* **The Dirichlet problem for harmonic functions on the two-dimensional complex**

12.35 – 13.10 *PhD **S. Tordeux** (INRIA Bordeaux Sud-Ouest, Université de Pau, Pau, France)* **Modeling of the damping of Multiperforated plates**

Thursday, July 3d

Chair Corresponding Member of RAS **S.I. Kabanikhin**

10.00 – 10.35 *Prof. **P.N. Vabishchevich** (Nuclear Safety Institute of RAS (IBRAE), Moscow, Russia*) **Numerical solving the boundary value problem for fractional powers of elliptic operators**

10.35 – 11.10 *Prof. **F.M. Fedorov** (Research Institute of Mathematics, North-Eastern Federal University, Yakutsk, Russia)* **On the general theory of infinite systems of linear algebraic equations**

Break 10 min

11.20 – 11.55 *PhD **A.V. Avdeev** (INTEL, Novosibirsk, Russia)* **Modern trends in the development of high-performance applications: overview of the latest software tools INTEL, examples of effective use of INTEL and special programs to support developers**

11.55 – 12.30 *PhD **N.P. Lazarev** (Research Institute of Mathematics, North-Eastern Federal University, Yakutsk, Russia)* **Problems of the theory of cracks with unknown boundaries for Timoshenko-type plates**

PARALLEL SESSION

Session 1:   Nonclassical Problems of Mathematical Physics

Chairperson: Prof. **Atusi Tani,** Prof. **Nedyu Popivanov**
Secretary: Tikhonova I.M.

1. **Abdrahmanov A.M.** *(Ufa State Aviation Technical University, Ufa, Russia)* Modified Dirichlet problem for the elliptic system with variable coefficients
2. **Alsykova A.A.** (*Buryat State University, Ulan-Ude, Russia)* On the solvability of boundary value problems for some equations of Boussinesq
3. **Antipin V. I.** *(North-Eastern Federal University named after M.K.Ammosov, Yakutsk, Russia)* Research of smoothness of solutions of boundary value problems for operator-differential equations of mixed type
4. **Atlasova E. I.** *(North-Eastern Federal University named after M.K.Ammosov, Yakutsk, Russia)* Solvability of some new challenges for the conjugation of nonclassical higher order differential equations
5. **Avdonina E., Ibragimov N., Khamitova R.** *(Ufa State Aviation Technical University, Ufa, Russia; Blekinge Institute of Technology, Karlskrona, Sweden)* Exact solutions of gasdynamic equations obtained by the method of conservation laws
6. **Chirkunov Y.A.** *(Novosibirsk State Technical University, Novosibirsk, Russia)* Partially invariant nonlinear oscillations viscoelastic bar
7. **Chuesheva N. A.** *(Kemerovo State University, Kemerovo, Russia)* The two differential equations of sixth order
8. **Dzhamalov S.Z.** *(National University of Uzbekistan named after M. Ulugbek, Tashkent, Uzbekistan)* Hierarchy of thin inclusions in elastic bodies
9. **Efimova E. S.** *(North-Eastern Federal University named after M.K.Ammosov, Yakutsk, Russia)* On a modified Galerkin method for a semilinear parabolic equation with changing direction of time
10. **Egorov I. E.** *(Research Institute of Mathematics NEFU, Yakutsk, Russia)* On boundary value problem for mixed type equation with spectral parameter
11. **Fedorov V. E., Gordievskih D. M.** *(Chelyabinsk State University, Chelyabinsk, Russia)* A class of fractional order degenerate evolution equations
12. **Gadoev M. G., Egorov I. E**. *(Polytechnic Institute (branch) of NEFU, Mirny, Russia; Research Institute of Mathematics NEFU, Yakutsk, Russia)*

On some spectral properties of a class of the second order nonselfadjoint elliptic operators

13. **Gimaltdinova A. A.** *(Samara State Academy of Social Sciences and Humanities, Samara, Russia; Sterlitamak Branch of Bashkir State University, Sterlitamak, Russia)* Dirichlet problem for Lavrentiev - Bitsadze equation with two lines of type in rectangular area

14. **Gurbanov P.** *(Ashgabat, Turkmenistan)* Some nonlocal problem for mixed equation with second order

15. **Gusel'nikov S. V., Kozhanov A. I**. *(Institute of molecular and cellular biology SB RAS, Novosibirsk, Russia; Sobolev Institute of Mathematics SB RAS, Novosibirsk, Russia)* Some mathematical problems of the biological population dynamics

16. **Hashimov A.R., Ahmedov M. I**. *(Tashkent Financial Institute, Tashkent, Uzbekistan)* On some boundary value problems for non-stationary composite type third order equation

17. **Ivanova N. D., Fyodorov V. E.** *(South Ural State University, Chelyabinsk, Russia; Chelyabinsk State University, Chelyabinsk, Russia)* Nonlinear inverse problem for a degenerate evolution equation

18. **Khludnev A. M.** *(Tashkent Architectural Building Institute, Tashkent, Uzbekistan)* Hierarchy of thin inclusions in elastic bodies

19. **Kholikov D. K.** *(Lavrentiev Institute of Hydrodinamics SB RAS, Novosibirsk, Russia)* On the nonlocal problem for the loaded Aller equation

20. **Koltunovskij O.A**. *(Yuzhno-Sakhalinsk Institute of Economics, Law and Informatics, Yuzhno-Sakhalinsk, Russia)* A radially symmetric solution of one inverse problem for the hyperbolic equation

21. **Korotkova E. M.** *(Ugra Research Institute of Information Technologies, Khanty-Mansiysk, Russia; Yugra State University, Khanty-Mansiysk, Russia)* On some inverse problems for a linearized heat and mass transfer system

22. **Kosheleva Yu.A**. *(Sakhalin State University, Yuzhno-Sakhalinsk, Russia)* On the solvability of some linear inverse problems for ultraparabolic equations with unknown right-hand side

23. **Kravchuk A. S., Popova T. S.** *(Belarusian State University, Minsk, Belarus; North-Eastern Federal University named after M.K.Ammosov, Yakutsk, Russia)* Definition of fractal properties of solid surface

24. **Lazarev N.P.** *(Research Institute of Mathematics NEFU, Yakutsk, Russia)* Equilibrium problem for a Timoshenko plate with an oblique crack

25. **Lukina G. A.** *(Polytechnic Institute (branch) of NEFU, Mirny, Russia)* Nonlocal boundary value problems with integral conditions for (2m + 1)-parabolic equations

26. **Markov V. G.** *(North-Eastern Federal University named after M.K.Ammosov, Yakutsk, Russia)* Boundary value problem solvability for high order mixed type equations

27. **Namsaraeva G. V.** *(East Siberia State University of Technology and Management, Ulan-Ude, Russia)* On inverse problems for some differential equations

28. **Nikolaev N. N.** *(North-Eastern Federal University named after M.K.Ammosov, Yakutsk, Russia)* Investigation of the solvability of the inverse problem for one equation of third order

29. **Novickaya A.N**. *(Aktobe State University, Aktobe, Kazakhstan)* Integrals of Euler type for the hypergeometric function $F_8^{(4)}$

30. **Pavlov S. S.** *(North-Eastern Federal University named after M.K.Ammosov, Yakutsk, Russia)* The inverse problem for nonclassical higher order differential equations with integral redefinition

31. **Petrushko I. M.** *(Moscow Power Engineering Institute, Moscow, Russia)* About the first mixed problem for the degenerating the parabolic equations with the changing direction time

32. **Pinigina N.R.** *(North-Eastern Federal University named after M.K.Ammosov, Yakutsk, Russia)* Boundary value problem for a class of equation of composite type high order

33. **Podgaev A. G., Lisenkov K. V**. *(Pacific National University, Khabarovsk, Russia)* Boundary value problems for degenerate parabolic equations on non-monotonic non-cylindrical domains or domains with unknown boundary

34. **Popov N. S.** *(North-Eastern Federal University named after M.K.Ammosov, Yakutsk, Russia)* On the solvability of nonlocal boundary value problems for nonclassical equations of third order

35. **Popov S. V.** *(North-Eastern Federal University named after M.K.Ammosov, Yakutsk, Russia)* Boundary value problems for parabolic equations with changing time direction

36. **Potapova S. V.** *(North-Eastern Federal University named after M.K.Ammosov, Yakutsk, Russia)* About one conjugation problem for the third order equation with multiple characteristics

37. **Prokopev A. V.** *(North-Eastern Federal University named after M.K.Ammosov, Yakutsk, Russia)* Coefficient inverse problem for elliptic-parabolic equation

38. **Prudnikov V.Ya.** *(Pacific National University, Khabarovsk, Russia)* Criterion of H-property of functionales

39. **Safiullova R.R.** *(Sterlitamak Branch of Bashkir State University, Sterlitamak, Russia)* Nonlinear inverse problems for the second order hyperbolic equation

40. **Semenova E. A.** *(North-Eastern Federal University named after M.K.Ammosov, Yakutsk, Russia)* On a third-order equation with nonlocal conditions Samarsky

41. **Shadrina N. N.** *(Buryat State University, Ulan-Ude, Russia)* On the solvability of some conjugation problems for elliptic equations

42. **Sidorov S. N.** *(Sterlitamak Branch of Bashkir State University, Sterlitamak, Russia)* Boundary problem for a degenerate equation of mixed type with unknown right-hand sides
43. **Sinyavskij A. G., Popov S. V.** *(North-Eastern Federal University named after M.K.Ammosov, Yakutsk, Russia)* Research of smooth solvability of boundary value problem for 2n-parabolic equations with changing time direction with full matrix of gluing conditions
44. **Spiridonova N.R.** *(North-Eastern Federal University named after M.K.Ammosov, Yakutsk, Russia)* Initial-boundary value problem in infinite cylinder for nonclassical differential equations
45. **Telesheva L. A.** *(Buryat State University, Ulan-Ude, Russia)* The solvability of linear inverse problem for a parabolic equation of high order with two unknown coefficients
46. **Tikhonova I. M.** *(Research Institute of Mathematics NEFU, Yakutsk, Russia)* Application of the modified Galerkin method to the equation of mixed type
47. **Yuldasheva A.V.** *(National University of Uzbekistan named after M. Ulugbek, Tashkent, Uzbekistan)* On solvability of one not well posed problem
48. **Zikirov O. S.** *(National University of Uzbekistan named after M. Ulugbek, Tashkent, Uzbekistan)* On solvability of non–local problem for the therd–order hyperbolic equations

Subsession 1.1. Optimal control and dynamic games

Chairperson: Corresponding Member of RAS **Subbotina N.N.**

Secretary: PhD **Tarasova G.I.**

1. **Akimov F.R.** *(North-Eastern Federal University, Yakutsk, Russia)* Online matching in game theory
2. **Berketov G. A., Romanova E. V.** *(Moscow State University of Economics, Statistics and Informatics , Moscow, Russia)* Method for solving of generalized scheduling problem for DSS
3. **Egorov R. I., Kaigorodov S. P.** *(Research Institute of Mathematics NEFU, Yakutsk, Russia; North-Eastern Federal University named after M.K.Ammosov, Yakutsk, Russia)* On the game-theoretic interpretation of the problem selection of bank interest rates
4. **Flegontov A. V.** *(Aktobe State University, Aktobe, Kazakhstan)* To the question of structural control systems reversible

5. **Katkovskaya K. V**. *(Novosibirsk State Academy of Water Transport, Novosibirsk, Russia)* Mathematical simulation of a control system of a vibroprotective device on the base of neural controller
6. **Kolokol'sov V. N., Troeva M. S.** *(University of Warwick, Coventry, United Kingdom; North-Eastern Federal University named after M.K.Ammosov, Yakutsk, Russia)* Mean-field approximation of controlled nonlinear Markov processes with jumps
7. **Kutukova L.T.** *(North-Eastern Federal University named after M.K.Ammosov, Yakutsk, Russia)* Perturbations of special form breaking up a polycycle
8. **Lukin V. S.** *(National Library of Republic Sakha, Yakutsk, Russia)* On differential game of modelling of environmental pollution problem
9. **Mestnikov S. V., Petrov N. V., Everstova G. V.** *(North-Eastern Federal University named after M.K.Ammosov, Yakutsk, Russia)* Numerical construction of the information sets in the simple search game with a team of pursuers and estimates for the detection probability
10. **Turova V.L., Lampe R., Botkin N.D., Blumenstein T., Alves-Pinto A.** *(Clinic `rechts der Isar', Technical University of Munich, Munich, Germany; Center for Mathematics, Technical University of Munich, Garching, Germany)* Autoregulation of cerebral blood flow: towards preventing intracranial hemorrhages in premature newborns

Session 2: Discrete Mathematics Methods and Applications

Chairperson: Prof. **Malcev I.A.**

Secretary: **Kupriyanova S.V.**

1. **Borodin O. V., Ivanova A. O.** *(Sobolev Institute of Mathematics SB RAS, Novosibirsk, Russia; Research Institute of Mathematics NEFU, Yakutsk, Russia)* New results about combinatorial structure of 3-polytopes
2. **Fedorov F. M., Ivanova O. F., Pavlov N. N.** *(Research Institute of Mathematics NEFU, Yakutsk, Russia; North-Eastern Federal University named after M.K.Ammosov, Yakutsk, Russia)* A strictly particular solution and consistency of infinite systems
3. **Ivanova A. O., Nikiforov D. V.** *(Research Institute of Mathematics NEFU, Yakutsk, Russia; North-Eastern Federal University named after M.K.Ammosov, Yakutsk, Russia)* Combinatorial structure of triangulated 3-polytopes with minimum degree 5

4. **Malsev I. A.** (*Sobolev Institute of Mathematics SB RAS, Novosibirsk, Russia*) Hyperidentities separating quasilinear clones on the three-element set

5. **Nikitin I. V.** *(Moscow Power Engineering Institute , Moscow, Russia)* Compound and properties of polynomial classes of preserving block partitions of discrete and continuous sets

6. **Nogovic'yn D. A., Shamaev E. I.** *(North-Eastern Federal University named after M.K.Ammosov, Yakutsk, Russia)* Convergence of bisectors flow of strictly convex polygons

7. **Polyakov N. L.** *(Financial University under the Government of the Russian Federation, Moscow, Russia)* On the clonal approach to some impossibility theorems

Session 3: Mathematical Modeling and Implementations of Numerical Methods

Chairperson: Prof. **Grigor'ev Yu.M., Prof. Chebotarev A.Yu.**

Secretary: PhD **Borisova M.N.**

1. **Abdurahimov A.** (Tashkent Architectural Building Institute, Tashkent, Uzbekistan) Works of reactor in fluidizing bed

2. **Akimov M.P., Zaharov P. E.** *(North-Eastern Federal University named after M.K.Ammosov, Yakutsk, Russia)* Modeling the dynamics of the temperature field of permafrost under the influence of channel-free underground pipelines by finite element method

3. **Ammosova O. A., Starostin N. P.** *(Oil and Gas Research Institute, Siberian Branch of the RAS, Yakutsk, Russia)* Borders of zones of thermal influence at BUtt welding of polyethylene pipes

4. **Ammosova O. A., Starostin N. P.** *(Oil and Gas Research Institute, Siberian Branch of the RAS, Yakutsk, Russia)* Simulation of the temperature field at electrofusion welding of polymeric pipes

5. **Antonov M.Yu.** *(North-Eastern Federal University named after M.K.Ammosov, Yakutsk, Russia)* Potential of mean force estimation for transmembrane transfer of water molecule using series of Umbrella Sampling simulations

6. **Aparcin A. S., Sidler I. V.** *(L.A.Melentiev Energy Systems Institute SB RAS, Irkutsk, Russia)* Integral models of long-term development of Russia's electric power system

7. **Berke V. S.** (*Far-Eastern Federal University, Vladivostok, Russia*) The evolutionary modeling of megapolis retailing

8. **Bondarev E. A., Grigor'ev A. V**. *(Oil and Gas Research Institute, Siberian Branch of the RAS, Yakutsk, Russia; North-Eastern Federal University named after M.K.Ammosov, Yakutsk, Russia)* Numerical simulation of natural gas filtration on the basis of doubly porosity model
9. **Danilenko E. A.** *(Far-Eastern Federal University, Vladivostok, Russia)* Construction of diffusion and two-flux approximation for the transport equation
10. **Egorova A. A., Matarkin S. V, Sharin E. P.** *(North-Eastern Federal University named after M.K.Ammosov, Yakutsk, Russia)* The lineshape of nuclear magnetic resonance near the surface of the superconducting plate
11. **Gamzaev H. M.** *(Azerbaijan State Oil Academy, Baku, Azerbaijan)* On a problem of unsaturated filtration with unknown boundaries
12. **Glasko Y.V., Volotskov M.Y.** *(Scientic Research Computing Center M.V. Lomonosov Moscow State University, Moscow, Russia; Russian State Geological Prospecting University, Moscow, Russia)* Mathematical model 3.5D concentration of mass, the algorithm and the calculation experiment
13. **Grenkin G. V., Chebotarev A.Yu.** *(Far-Eastern Federal University, Vladivostok, Russia; Institute of Applied Mathematics, Far-Eastern Branch of the RAS, Vladivostok, Russia)* Nonstationary complex heat transfer problem
14. **Grigor'ev Yu.M.** *(North-Eastern Federal University named after M.K.Ammosov, Yakutsk, Russia)* On viscosity in the mathematical model of the earths inner and liquid cores motions caused by tidal deformation
15. **Grigor'ev Yu.M., Borisova M. N., Sobakina V.U.** *(North-Eastern Federal University named after M.K.Ammosov, Yakutsk, Russia; Oil and Gas Research Institute, Siberian Branch of the RAS, Yakutsk, Russia)* Mathematical modeling of storm overvoltage in multiconductor transmission lines under cryolithozone
16. **Gusev E. L.** *(North-Eastern Federal University named after M.K.Ammosov, Yakutsk, Russia)* Development and application of mathematical and computer modeling for solving optimal design of composite structures
17. **Guzev M.A., Kradin N.N., Nikitina E.Y.** *(Institute for Applied Mathematics, FEBRAS, Vladivostok, Russia; Institute of History, Archaeology and Ethnology, FEBRAS, Vladivostok, Russia; Far Eastern Federal University, Vladivostok, Russia)* Towards the modeling low-formalized domains
18. **Ivanov B. D.** *(North-Eastern Federal University named after M.K.Ammosov, Yakutsk, Russia; Research Institute of Mathematics NEFU, Yakutsk, Russia)* Comparison time of mining gas-gashydrate stratum from material balance and numerical method at depressurization in conservation of two-phase equilibrium

19. **Ivanova S. S., Vasil'eva M. V.** *(North-Eastern Federal University named after M.K.Ammosov, Yakutsk, Russia)* Numerical modelling of heat transfer problem in permafrost

20. **Karachanskaya E. V.** *(North-Eastern Federal University named after M.K.Ammosov, Yakutsk, Russia)* On simulation of random walks in space

21. **Krylova E.A.** *(North-Eastern Federal University named after M.K.Ammosov, Yakutsk, Russia)* Numerical solution of the inverse problem of Stephen by introducing a distributed source of heat

22. **Mihailov S. Ya., Timofeeva T. S.** *(Pacific National University, Khabarovsk, Russia)* Numerical methods on development of oil reservoirs

23. **Nikolaev V. E., Ivanov G.I.** *(North-Eastern Federal University named after M.K.Ammosov, Yakutsk, Russia)* The influence of heat exchange of reservoir beds with enclosing rocks at non-isothermal filtration of a real gas during injection

24. **Nikolaeva M. A., Vasil'eva M. V.** *(North-Eastern Federal University named after M.K.Ammosov, Yakutsk, Russia)* Numerical modelling of poroelasticity problem on computational cluster

25. **Nim Yu.A.** *(North-Eastern Federal University named after M.K.Ammosov, Yakutsk, Russia)* Phenomenological model of unstable electromagnetic field of polarizable geological stratum at the disturbance of the vertical magnetic dipole

26. **Novikov E. A., Novikov A. E.** *(North-Eastern Federal University named after M.K.Ammosov, Yakutsk, Russia)* Modification of method Fehlberg seven order

27. **Pavlov N. N., Fedorov F. M., Ivanova O. F.** *(North-Eastern Federal University named after M.K.Ammosov, Yakutsk, Russia)* On the principal and strictly particular solution of infinite systems of linear algebraic equations

28. **Permyakov P. P., Popov G. G., Ammosov A. P.** *(Institute of Computational Modelling, Siberian Branch of the RAS, Krasnoyarsk, Russia; Siberian Federal University, Krasnoyarsk, Russia)* Mathematical modeling of temperature modes ground bases of linear engineering constructions at modern climate change

29. **Polikarpova O. D., Timofeeva T. S.** *(Larionov Institute of the Physical-Technical Problems of the North SB RAS, Yakutsk, Russia)* Problems of numerical simulation of the sea ice cover

30. **Popov V. V.** *(North-Eastern Federal University named after M.K.Ammosov, Yakutsk, Russia)* Numerical realization of the mathematical model of freezing wet ground

31. **Pyatkov S. G., Safonov E. I.** *(Yugra State University, Khanty-Mansiysk, Russia)* Numerical simulation of heat and mass transfer

32. **Rudnev K. K.** *(Samara State Transport University, Samara, Russia)* Numerical algorithm of estimation of parameters of nonlinear stationary

multidimensional dynamic system in the presence of hindrances in output signals

33. **Semashkin V. G.** *(Samara State Transport University, Samara, Russia)* Numerical method of estimation of parameters of nonlinear dynamic system of the different rank with hindrances in output signals

34. **Tikhonov A. G.** *(Yakutsk Economics and Law Institute, Yakutsk, Russia)* Recovery of the boundary condition for the parabolic equation

35. **Tikhonov R. S., Starostin N. P.** *(Oil and Gas Research Institute, Siberian Branch of the RAS, Yakutsk, Russia; North-Eastern Federal University named after M.K.Ammosov, Yakutsk, Russia)* Modeling of thermal processes in the system on a common shaft of bearings at low speeds

36. **Tsvetkov E.A.** *(Central Scientific Research Institute of Chemistry and Mechanics, Moscow, Russia)* Variance reduction techniques on product of probability spaces

37. **Vabishchevich P. N, Vasil'ev A. O.** *(Nuclear Safety Institute of the RAS, Moscow, Russia; North-Eastern Federal University named after M.K.Ammosov, Yakutsk, Russia)* Finite element method for two-group neutron equation in hexagonal geometry

38. **Vasil'ev M. D., Trofimcev Yu.I.** *(North-Eastern Federal University named after M.K.Ammosov, Yakutsk, Russia)* Modeling of continuously recharged population

39. **Vasil'eva M. A., Kondakov A. S., Starostin N. P.** *(Oil and Gas Research Institute, Siberian Branch of the RAS, Yakutsk, Russia)* Simplified 3D model of thermal process and definition of heat generation function in polymer sliding bearing

40. **Vasil'eva M.A., Starostin N. P**. *(Oil and Gas Research Institute, Siberian Branch of the RAS, Yakutsk, Russia)* Simulation of heating by heated air of long length polyethylene pipes

Session 4 :   Mathematical Modeling of Northern Territories Problems

Chairperson: Prof. **Voevodin A.F.,** Prof. **Bondarev E.A.**

Secretary: **Nikolaeva N.A.**

1. **Ammosov S.P., Diaghilev G.T.** *(North-Eastern Federal University named after M.K.Ammosov, Yakutsk, Russia; Yakutia Research Institute of Agriculture, Yakutsk, Russia)* Mathematical model for predicting when an epizootic anthrax horses in Yakutia

2. **Ammosov S.P., Kaygorodov S.P.** *(North-Eastern Federal University named after M.K.Ammosov, Yakutsk, Russia)* On a model of population dynamics of horses and wolves in the republic of Sakha (Yakutia)

3. **Bondarev E.A., Rozhin I.I., Argunova K.K.** *(Oil and Gas Research Institute, Siberian Branch of the RAS, Yakutsk, Russia)* Underground storage of natural gas in hydrate state: investigation of possible development

4. **Chebotarev A.A., Grenkin G.V.** *(Institute of Applied Mathematics, Far-Eastern Branch of the RAS, Vladivostok, Russia; Far-Eastern Federal University, Vladivostok, Russia)* Analysis of the problem of natural convection with radiative heat transfer

5. **Chetyrbotsky A.N., Chetyrbotsky V.A.** *(Far Eastern Geological Institute of the Far-Eastern Branch of the RAS, Vladivostok, Russia; Moscow State University, Moscow, Russia)* Problems of numerical simulation of the sea ice cover

6. **Chirkunov Y.A., Pikmullina E.O.** *(Novosibirsk State Technical University, Novosibirsk, Russia)* Invariant submodels of the thermal motion of a gas

7. **Gusev E.L.** *(North-Eastern Federal University named after M.K.Ammosov, Yakutsk, Russia; Oil and Gas Research Institute, Siberian Branch of the RAS, Yakutsk, Russia)* Application of mathematical modeling methods for the study of pipeline transportation systems when exposed to extreme environmental factors

8. **Ivanova O.F., Fedorov F.M., Pavlov N.N.** *(North-Eastern Federal University named after M.K.Ammosov, Yakutsk, Russia;, Research Institute of Mathematics NEFU, Yakutsk, Russia)* The consideration of the problem of bending of plates with sealed edges to the solution of an infinite system

9. **Mamaeva S.N., Nogovitsin P.I., Yakovlev A.M.** *(North-Eastern Federal University named after M.K.Ammosov, Yakutsk, Russia)* Mathematical model for determining the voltage-current characteristic of the field electronic cathode by applying the theory of Einstein's photoelectric effect

10. **Nim Y.A.** *(North-Eastern Federal University named after M.K.Ammosov, Yakutsk, Russia)* Phenomenological model of unstable electromagnetic field of polarizable geological stratum at the disturbance of the horisontal magnetic dipole

11. **Okhlopkov G.N.** *(North-Eastern Federal University named after M.K.Ammosov, Yakutsk, Russia)* Forecasting of gross output in the region on the basis of dynamic input-output balance model

12. **Oshorov B.B., Oshorov Bato.B.** *(East Siberia State University of Technology and Management, Ulan-Ude, Russia)* About one mathematical model for surface inflection

13. **Popova T.S.** *(North-Eastern Federal University named after M.K.Ammosov, Yakutsk, Russia)* A fictitious domain method in the equilibrium problem for a viscoelastic plate

14. **Pyataev S.F.** *(Institute of Computational Modelling, Siberian Branch of the RAS, Krasnoyarsk, Russia)* Mathematical modeling of limit thermoelastic state of composite materials based on local structural approach

15. **Romashchenko Y.A., Efremova S.A.** *(North-Eastern Federal University named after M.K.Ammosov, Yakutsk, Russia)* Balance of magnetized plasma in the field of a magnetic dipole

16. **Rysbaiuly B.** *(International University of Information Technologies, Almaty, Kazakhstan)* An inverse coefficient problem for the frozen soil

17. **Semenov M.F., Shadrin V.Y.** *(North-Eastern Federal University named after M.K.Ammosov, Yakutsk, Russia)* An equal-area splitting of the sphere and its application for calculation of the radiation factors

18. **Shadrin V.Y., Pavlov N.N.** *(North-Eastern Federal University named after M.K.Ammosov, Yakutsk, Russia)* On the multigrid method of calculation of two-dimensional stationary temperature fields of outer bounding constructions with peculiarities

19. **Shimelevich M.I.** *(Russian State Geological Prospecting University, Moscow, Russia)* Neural network approximation methods in nonlinear inverse problems of geophysics

20. **Sleptsov S.D., Savvinova N.A., Rubtsov N.A.** (*Kutateladze Institute of Thermophysics SB RAS, Novosibirsk Russia; North-Eastern Federal University named after M.K.Ammosov, Yakutsk, Russia; ФГБУН Kutateladze Institute of Thermophysics SB RAS, Novosibirsk Russia)* Numerical simulation of one-phase stefan problem in translucent scattering medium

21. **Solodusha S.V., Suslov K.V.** *(L.A.Melentiev Energy Systems Institute SB RAS, Irkutsk, Russia;* Irkutsk State Technical University*, Irkutsk, Russia)* Mathematical model of switched reluctance drive on the basis of Volterra series

22. **Taltykina M.Y., Kashyrin A.A.** *(Computer Center Far-East Branch of the RAS, Khabarovsk, Russia)* Mosaic-skeleton method for solving the Dirichlet's problems for the Helmholtz equation

23. **Voevodin A.F.** *(Lavrentiev Institute of Hydrodinamics SB RAS, Novosibirsk, Russia)* Difference-analytical method of solving boundary value problems of ordinary differential equations on the bases of adjoint equations

24. **Voltchkov Y.M.** *(Lavrentiev Institute of Hydrodinamics SB RAS, Novosibirsk, Russia)* Modified equations of the theory of plates and shells with arbitrary conditions on their front surfaces

Session 5 : Session of the Scientific school seminar of physics and mathematics forum "Lenski Kray"

Chairperson: Prof. **Petrushko I.M.**

Secretary: PhD **Vasil'eva N.V.**

1. **Bravina A.A.** *(Krest- Khaljayskaya School, Tomponskiy District, Sakha Republic, Russia)* Electric current at lightning discharges
2. **Ivanov A.A.** *(Yakutsk City Lyceum, Yakutsk, Russia)* Mathematical model of saving Yukaghir language
3. **Ivanov V.K.** *(Oktyomsky Lyceum, Khangalassky District, Sakha Republic, Russia)* Opaque polygon
4. **Iudin M.V.** *(Nyurbinsky Technical Lyceum, Nyurbinsky District, Sakha Republic, Russia)* Research process of mineral separation with differences in density and size in a pneumatic spiral tube
5. **Kurchatov D.B., Teguryukov R.SH.-O.** *(Krest- Khaljayskaya School, Tomponskiy District, Sakha Republic, Russia)* Determination of the power of Earth layers and water areas
6. **Lobashev A.A.** *(Republic Lyceum-boarding school, Yakutsk, Russia)* Modelling popularity changes process
7. **Ostobunaeva S.V.** *(School №5, Yakutsk, Russia)* Mathematical Models of allotropic forms of the carbon
8. **Smagulova A., Tsyn M.** *(School №3, Yakutsk, Russia)* Graphene oxide paper
9. **Teguryukova N.A.** *(Krest- Khaljayskaya School, Tomponskiy District, Sakha Republic, Russia)* Space sounds
10. **Shirokov I.M.** *(School №15, Neryungri, Sakha Republic, Russia)* Code of life or the greatest number of non-overlapping unit circles located on a sphere of radius R (packing problem)
11. **Uchugyaev V.I.** *(Republic Lyceum-boarding school, Yakutsk, Russia)* Plane that divides the surface area and volume of an infinite sequence of polygonal pyramids on an equal finitary relations

7ᵗʰ International conference on MATHEMATICAL MODELING