Joint Program of the 6th Russian Workshop on Mathematical Models and Numerical Methods in Biomathematics and the 4-th International Workshop on the Multiscale Modeling and Methods in Biology and Medicine

Venue: INM RAS, Room 727, Gubkin str., 8, Moscow (www.inm.ras.ru)

October 29, Wednesday

10:00-10.10 **Opening of the 6th Russian workshop on mathematical models and numerical methods in biomathematics (in Russian)**

Session 1, chairman: Yu. Vassilevski (in Russian)

10.10-10.40 **A.Chupakhin (Inst. of hydrodynamics, Novosibirsk). Blood flow monitoring in brain vessels**

10.40-11.05 **A.Cherevko (Inst. of hydrodynamics, Novosibirsk). Numerical modelling of affected zone for cerebral aneurysm**

11.05-11.30 **I.Petrenko (Vladimir State Univ.). Embolization of arteriovenous malformations: model and optimization**

11.30-11.55 **A.Khe (Inst. of hydrodynamics, Novosibirsk). Modelling of multiple cerebral aneurysms**

11.55-12.20 **Coffee break**

Session 2, chairman: A. Chupakhin (in Russian)

12.20-12.45 **A.Yanchenko (Novosibirsk State Univ.). Numerical and experimental study of blood flow in carotid bifurcation**

12.45-13.10 **A.Mikhailova (Novosibirsk State Univ.), A.Cherevko, A.Chupakhin (Inst. of hydrodynamics, Novosibirsk), A.Krivoshapkin, K.Orlov, V.Panarin (Inst. of blood circulation pathology, Novosibirsk). Relaxational oscillations of hemodynamic parameters on cerebral**

vessels

13.10-13.35 T.Gamilov, S.Simakov (Moscow Inst.Phys.Tech.), E.Boileau (Swansea Univ.). Validation and testing of 1D haemodynamics models

13.35-14.00 A.Tokarev (Nat. Research Centre for Hematology, Moscow). Spatial Dynamics of Blood Coagulation

14.00-15.15 Lunch

15.15-15.30 Openning of the 4-th International workshop on the multiscale modeling and methods in biology and medicine

Session 3, chairman: N.Pertsev

15.30-16.00 G.Panasenko (Inst. C.Jordan, St-Etienne, Laboratory Poncelet, Moscow). Junction of models of different dimension for flows in thin structures

16.00-16.30 S.Simakov, T.Gamilov (Moscow Inst.Phys.Tech.). 1D-0D coupled algorithms for haemodynamical modeling

16.30-17.00 V.Volpert (Inst. C.Jordan, Lyon). Multi-scale models in cell dynamics

17.00-17.30 G.Vial (Inst. C.Jordan, Lyon). Profile computations for elliptic problems in domains with small holes

17.30-17.45 Coffee-break

Session 4, chairman: V.Volpert

17.45-18.15 M.Viallon (Inst. C.Jordan, St-Etienne). Iterative strong coupling of a geometrical multi-scale model for a parabolic problem

18.15-18.45 F.Ataullakhanov (National Cent.Problems in Chemo-Physical Pharmacology, Moscow). Multiscale modelling of the microtubule dynamics

18.45-19.15 **P.Chelle (Ecole des Mines, Saint-Etienne). Assessment of thrombin generation numerical models**

October 30, Thursday

Session 5, chairman: G.Panassenko

10.00-10.30 **V.Shiryaev, J.Orlik (Fraunhofer Inst., Kaiserslautern), G.Panasenko (Instit. Camille Jordan, St-Etienne, Labor. Poncelet, Moscow). Optimization of Robin-type problems of elasticity via homogenizationand beam models with the application to medical textiles design**

10.30-11.00 **N.Pertsev (Inst. of Mathematics, Omsk). Application of monotone operators and M-matricies for studying solutions of high-dimension models in biology and medicine**

11.00-11.30 **J.Orlik, D. Cioranescu, A. Damlamian, V. Shiryaev (Fraunhofer Inst., Kaiserslautern). Homogenization of the frictional contact problems on a periodic medical textiles**

11.30-11.50 **Coffee-break**

Session 6, chairman: G.Bocharov

11.50-12.20 **R.Aliev, R.Syunyaev (Moscow Inst.Phys.Tech., Fed.Biomedical Agency). Computer simulations of propagation and reentry patterns in the sinoatrial node**

12.20-12.50 **A.Tsaturyan (Moscow State Univ.). A mechanochemical model of cardiac muscle: simulation of experiments in vitro and left ventricle pumping function**

12.50-13.20 **O.Solovyova, V. Markhasin (Inst. Immunology and Physiology, Ural Fed.Univ., Yekaterinburg). Role of cardiac mechano-electric coupling in arrhythmogenesys**

13.20-13.50 **A.Vasilyeva, N.Vikulova, V.Marhasin, O.Soloyyova (Inst. Immunology**

and Physiology, Yekaterinburg). Transmural heterogeneity of myocardium in norm and pathology

13.50-14.50 Lunch

Session 7, chairman: O.Solovyova (in Russian, except Mukhin)

14.50-15.15 A.Danilov (INM). ECG numerical modelling for patients with pathologies

15.15-15.40 A.Kursanov (Inst. Immunology and Physiology, Yekaterinburg). Impact of mechanical factors on o rhythm disturbances in mathematical model of cardiac fiber

15.40-16.05 A.Zhmurov (Moscow Inst.Phys.Tech.). Structure and biomechanics of fibrin polymers

16.05-16.35 S.Mukhin (Moscow State Univ.). Mathematical models of hemodynamic as an instrument for solution of related medical problems

16.35-16.55 Coffee break

Session 8, chairman: A.Medvinskiy (in Russian)

16.55-17.25 A.Medvinskiy, N.Nurieva, A.Rusakov (Inst.Theoretical and Exper.Biophysics, Puschino), B.Adamovich, T.Miheev, T.Zhukova (Belorus.state univ., Minsk), N.Radchikova (Belorus. state pedagog. univ.) . Life on chaos border? Mathematical modelling and analysis of field measurements

17.25-17.50 N.Pertsev (Inst. of Mathematics, Omsk). Asymptotic behavior of solutions of mathematical models for epidemic processes with common structural properties

17.50-18.15 V.Leonenko (Univ. of inform.technologies, mechanics and optics, S-Peterburg), N.Pertsev (Inst. of Mathematics, Omsk). High performance computing for mimetic modelling of socially significant

diseases propagation

18.15-18.40 **R.Trascheev (Inst.Fund.Problems of Biology, Puschino), D.Sarancha (Computing Centre,Moscow). Approaches to modelling of biocenosis**

31 October, Friday

Session 9, chairman: A.Polezhaev

10.00-10.30 **A.Bratus (Moscow State Univ.). On viable therapy strategy in mathematical models of interaction drugs and maligant cells**

10.30-11.00 **J.Clairambault, Rebecca Chisholm, Jean Clairambault, Tommaso Lorenzi, Alexander Lorz, Benoît Perthame, Emmanuel Tréla (Jacques-Louis Lions Laboratory, Paris), Alexandre Escargueil (Cancer Biology and Therapeutics Lab, INSERM & UPMC, St Antoine Hosp., Paris). Drug resistance in cancer: biological and medical issues, continuous modelling using structured population dynamics and theoretical therapeutic optimisation**

11.00-11.25 **T.Galochkina (Fed. Biomedical Agency, MSU, Moscow), A.Bratus (Moscow State Univ.), Víctor M. Pérez García (Univ. de Castilla-La Mancha). Optimal radiotherapy regimes for low grade gliomas: insights from a mathematical model**

11.25-11.50 **A.Kolobov (Phys.Inst., INM, Moscow), M.Kuznetsov (Phys.Inst.). Tumor growth modeling under antiangiogenic therapy**

11.50-12.10 **Coffee break**

Session 10, chairman: A.Bratus (in Russian)

12.10-12.30 **Yu.Ivanov (INM, Moscow), R.Pryamonosov (Moscow State Univ.). Patient specific reconstruction of vascular network for hemodynamic modelling**

12.30-12.50 **S.Maltseva (Inst. of hydrodynamics, Novosibirsk). Cerebral vascular network reconstruction on high field MRI data**

12.50-13.10 **V.Salamatova (Moscow Inst.Phys.Tech., INM). Modelling of soft tissue deformation**

13.10-13.30 **E.Timme (Inst. Biomedical Problems, Moscow), M.Vinogradov, E.Akimov(Centre of sport innovative technologies and training teams, Moscow). Modeling of sport shape dynamics in endurance sports**

13.30-13.50 **V.Maryakhina, Gun'kov V.V. (Orenburg State Univ.). Fluorescence of photosensitizer and its diffusion in biological liquid flow**

13.50-14.10 **K.Novikov (Moscow State Univ.). Mathematical modelling of early endosomes and dynamics of Rab5**

14.10-14.30 **G.Strukov, G.Strukova (Inst. Solid State Phys., Chernogolovka). 3D-mesostructures obtained by self-organization of metallic nanowires**

14.30-14.50 **D.Konyagin (NVIDIA, Moscow). Accelerated Computing from Mobile Devices to Supercomputers**

14.50 **Closing**