

Technical Program

MODELLING FOR AEROSPACE APPLICATIONS Friday, 7th of December 14:00-16:00		Arctica 2.02
<i>The study of the atmosphere, hydrodynamics, aerodynamics, sensors</i>		
14:00	"Water pump" mechanism of transporting vapor to the Martian upper atmosphere	D. Shaposhnikov ^{1,2} , A. Rodin ^{1,2} , A. S. Medvedev ³ <i>1 MIPT, 2 Space Research Institute RAS, 3 Max Planck Inst Solar System R</i>
14:20	Non-hydrostatic general circulation model of the Venus atmosphere	M. Razumovsky ¹ , A. Rodin ^{1,2} <i>1 MIPT, 2 Space Research Institute RAS</i>
14:40	Feature-Based Deep Learning Method for fluid dynamics	Yixing Wang ¹ , Renkun Han ¹ , Gang Chen ^{1,2} <i>State Key Laboratory for Strength and Vibration of Mechanical Structures, Shaanxi Province Key Laboratory for Service Environment and Control of Advanced Aircraft, Xi'an Jiaotong University</i>
15:00	Design and development of spacecraft structures in terms of ensuring their maximum strength and minimum weight.	V. Semenov ^{1,2} , H. Zinta ¹ <i>1 MIPT, 2 Central Aerohydrodynamic Institute (TsAGI)</i>
15:20	Experimental and Numerical Investigation of Tip Vortex Structures on a Bio-inspired Discrete Wing	Zhe Hui, Yang Zhang, Gang Chen, Yueming Li <i>State Key Laboratory for Strength and Vibration of Mechanical Structures, Shaanxi Province Key Laboratory for Service Environment and Control of Advanced Aircraft, Xi'an Jiaotong University</i>
15:40	Structure and shear coupled motion of <001> tilt grain boundaries in titanium nitride	Lei Zhang, Wenshan Yu, Shengping Shen <i>State Key Laboratory for Strength and Vibration of Mechanical Structures, Shaanxi Engineering Laboratory for Vibration Control of Aerospace Structures, School of Aerospace Engineering, Xi'an Jiaotong University</i>

Technical Program

MODELLING FOR AEROSPACE APPLICATIONS Friday, 7th of December 16:20-18:00		Arctica 2.02
<i>Space dust, analytical mechanics, interboard flights</i>		
16:20	Perspective instrument Meteor-2 for study and collection of samples from asteroid transit atmosphere	A. Krivenko, A. Demianov, V. Vysochkin <i>GEOKHI RAS</i>
16:40	Regolith of Near-Earth Asteroids (NEA) as the target of satellite mission: Itokawa' lesson.	S. Voropaev, N. Dushenko, A. Stennikov <i>GEOKHI RAS</i>
17:00	Near-Earth Asteroids as a Base for Interplanetary Economy Supply	S. Biktimirov ¹ , R. Lipkis ² , A. Toporkov ³ , P. Skobelev ⁴ , A. Tsarev ⁴ , A. Ivanov ¹ <i>1 Skolkovo Institute of Science and Technology</i> <i>2 Stanford University</i> <i>3 Bauman Moscow State Technical University</i> <i>4 Software Engineering Company Smart Solutions</i>
17:20	An adaptive algorithm for search and support of the equilibrium orbital orientation of the International Space Station	E. Mikrin, S. Timakov <i>RSC "Energiya"</i>
17:40	Application of algorithm of sequence-closure in the problem of searching and maintaining the equilibrium orientation of the large space station	K. Bogdanov, S. Timakov <i>RSC "Energiya"</i>

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MODELLING FOR AEROSPACE APPLICATIONS		Arctica 2.02
Saturday, 8th of December 14:00-16:00		
<i>Mechanics, power generation, combustion, engines</i>		
14:00	About illumination of Russian Arctic regions by groups of satellite illuminators with total reflected sunlight during the polar night	A. Boger ¹ , S. Timakov ² <i>1 MIPT, 2 RSC "Energia"</i>
14:20	Flexoelectricity and its applications in energy harvesting	Qian Deng, Shengping Shen <i>State Key Laboratory for Strength and Vibration of Mechanical Structures, School of Aerospace, Xi'an Jiaotong University</i>
14:40	Flexoelectric energy harvesting with circular membrane	Zhaoqi Li, QianDeng, Shengping Shen <i>State Key Laboratory for Strength and Vibration of Mechanical Structures, School of Aerospace, Xi'an Jiaotong University</i>
15:00	Experience on calculating laminar flame speed in the framework of RANS equations with simplified chemical mechanism	Wenchao Liu <i>MIPT</i>
15:20	Analysis of the effect of water injection in the supersonic jet of liquid-propellant rocket on gasdynamic loadings acting on launchers	A. Minko ¹ , O. Gousskov ² <i>1 Central Institute of Aviation Motors, 2 MIPT</i>
15:40	Validation of models for calculating the combustion of hydrogen in a supersonic flow according to the results of the accurate physical experiment	N. Kukshinov ¹ , S. Batura ¹ , M. Frantsuzov ¹ , O. Gousskov ^{1,2} <i>1 Central Institute of Aviation Motors, 2 MIPT</i>

Technical Program

SMALL SATELLITES Friday, 7th of December 14:00-16:00		Arctica 5.02
<i>Constellation of satellites, the use of microsattelites, ion engines, platforms</i>		
14:00	Aerospace infocommunications network EFIR satellite constellation	A.M.Saushkin <i>Corporation RSS</i>
14:20	Microsatellites and educational programs	L. Zelenyi, S. Klimov, A. Sadovski <i>Space Research Institute RAS</i>
14:40	Sun-Venus Lagrangian point satellite for the Venera-D mission	I. Kovalenko, N. Eismont <i>Space Research Institute RAS</i>
15:00	School scientific experiment on board satellites "SiriusSat-1,2"	Z. Zhumaev, R. Zharkikh, V. Ivanenko, A. Kopik <i>SPUTNIX</i>
15:20	Microsatellite project for sounding upper atmosphere	I. Gazizov ¹ , R.Talipov ¹ , S. Zenevich ¹ , M. Spiridonov ^{1,3} , A. Rodin ^{1,2} <i>1 MIPT, 2 Space Research Institute RAS, 3 Prokhorov General Physics Institute</i>
15:40	KeRC activities in the field of small satellite EP	A. Lovtsov <i>KeRC</i>

Technical Program

SMALL SATELLITES Friday, 7th of December 16:20-18:00		Arctica 5.02
<i>Quality of constellation, ISS, platforms</i>		
16:20	Tablesat microsatellite platform and its applications	N. Ivlev ^{1,3} , A. Sivkov ¹ , A. Purikov ² , V. Ivanenko ² <i>1 MIPT, 2 Space Research Institute, 3 SPUTNIX</i>
16:40	Writing with Sunlight: a Feasibility Study of a CubeSat Formation Mission	N.Mullin, S.Biktimirov, A. Kharlan, D.Priykin <i>Skolkovo Institute of Science and Technology</i>
17:00	Evaluation of the quality characteristics of satellite systems by mathematical modeling	A. Gritsenko <i>ISC "Severnaya Corona"</i>
17:20	Microsatellites as a part of the International Space Station's Russian segment infrastructure.	V.Angarov, M.Dolgonosov, L.Zelenyi, S.Klimov, V.Nazarov, D.Novikov, A.Petrukovich, V.Rodin, N.Eismont <i>Space Research Institute</i>
17:40	Mid-IR fiber components for space-borne spectroscopic instruments	T.Tebeneva ¹ , O.Benderov ¹ , B. Stepanov ² , I.Nechepurenko ³ , A. Rodin ¹ <i>1 MIPT, 2 Institute of Chemistry of High-Purity Substances RAS 3 Dukhov research Institute of automatics</i>

Technical Program

SMALL SATELLITES		Arctica
Saturday, 8th of December 14:00-16:00		5.02
<i>Diagnostics, sensors, analytical mechanics</i>		
14:00	Satellite dynamics with aerodynamic attitude control system	S.A. Gutnik <i>MIPT, Central Aerohydrodynamic Institute (TsAGI)</i>
14:20	Active vibration analysis/control of inflatable space antenna reflectors	J. Mohanty <i>Skolkovo Institute of Science and Technology</i>
14:40	Small Satellites Structural Elements Tension Control by Quantum Sensor made of Modified Diamond with NV-center	S. Dianov ¹ , V. Novichkov ² <i>1 Moscow State Technical University of Civil Aviation, 2 Moscow Aviation Institute</i>
15:00	Information-Measuring System for Endurance Test of Small Satellites Structural Elements	V. Novichkov, Yu. Mishin <i>Moscow Aviation Institute</i>
15:20	High throughput X-band transmitters for the small satellites.	E. Kruglik <i>NPP «SAIT»</i>

Technical Program

SPACE DEBRIS Friday, 7th of December 14:00-16:00		Arctica 5.19(1)
<i>Causes, consequences and parameters</i>		
14:00	Determination of spacecraft non-orbital parameters	A.V. Yudaev <i>MIPT</i>
14:20	Geopolitical aspects of active debris removal: legal challenges and economic perspectives	A.V. Bondarenko <i>First Civil University</i>
14:40	Assessment of the impact of launches of small satellites and large constellations on the space debris population of low Earth orbits	D. V. Stepanov, I. V. Usovik, M. V. Yakovlev <i>TSNIIMASH</i>
15:00	Analytical expressions for magnetic tensors of geometric primitives	S.Efimov, <i>MIPT</i>
15:20	Project of space-rocket system intended for disposal of space debris at geostationary orbit	S.A. Ishkov, P.V. Fadeenkov, G.A. Filippov <i>Samara national research university</i>
15:40	Analysis of the ISON network contribution to the solution of near-Earth space monitoring tasks	I.E. Molotov <i>Keldysh Institute of Applied Mathematics RAS</i> <i>Small innovation enterprise «KIAM Ballistics-Service» Ltd.</i>

Technical Program

SPACE DEBRIS		Arctica
Friday, 7th of December 16:20-18:00		5.19(1)
<i>Determination the parameters of objects</i>		
16:20	Astrometry and Photometry of Satellites and Space Debris at the ISON-Castelgrande Observatory	S.Schmalz ¹ , I. Molotov ¹ , F. Graziani ² , V. Kouprianov ⁴ , R. Di Roberto ² , M. Truglio ² , V. Voropaev ¹ <i>1 Keldysh Institute of Applied Mathematics RAS 2 G.A.U.S.S. Srl, Via Sambuca Pistoiese 3 University of North Carolina, Department of Physics and Astronomy, 4 Central Astronomical Observatory RAS</i>
16:40	New Orbit Estimation Algorithms and Their Analysis in Difficult Observation Conditions for UN ORT Data	A. Kolessa ^{1,2} , A. Lukyanov A. ^{1,2} , V. Radchenko ^{1,2} , A. Ivanov A. ^{1,2} , A. Tartakovsky ¹ <i>1 MIPT 2 JSC "Vimpel"</i>
17:00	Recognition of objects from images of an optical telescope	I. Perepechkin, E. Polnikov, V. Semaka, E. Pliashkov, N. Zavalova <i>MIPT</i>
17:20	An overview of modern numerical methods for ballistics	N.Zavalova, A. Bikov, I.Zavalov, V.Panov, R. Plavnik <i>MIPT</i>
17:40	Optimal spectral range determination for the small satellite onboard camera for remote determination of the geostationary space debris physical properties.	R. Ramaldanov <i>TSNIIMASH</i>
18:00	Track detection using convolutional neural network.	A. Shevchenko, A. Shemenev <i>MIPT</i>

Technical Program

STUDENT CONTEST		Arctica
Saturday, 8th of December 14:00-16:00		5.19(1)
<i>Simulation & Experiment</i>		
14:00	Proposed system design idea of collection and safe disposal of small space debris.	Amar Kumar Sahadev Ram <i>MIPT</i>
14:15	Simulation of the radio link operation using adaptive coding modulation	A. Nikolaeva, Yu. Nesterkin <i>1 MIPT,</i> <i>2 Corporation RSS</i>
14:30	Research and analysis of the defective structure of a metal sample after tensile tests to determine the properties of the material	N. Burtelova <i>MIPT</i>
14:45	The assessment of operational capability of the space-based hyperspectral complex (HSC).	S. Zotov ¹ , Y. Dmitriev ² , S. Shibanov ¹ <i>1 MIPT,</i> <i>2 Institute of Numerical Mathematics, RAS</i>
15:00	Reflector and actuators for the mechanically reconfigurable space antenna	Siyang Song, Shubao Shao, Minglong Xu, Yan Shao <i>State Key Laboratory for Strength and Vibration of Mechanical Structures, School of Aerospace, Xi'an Jiaotong University</i>
15:15	Lightning detector for small science satellite	V. Kvitka ^{1,2} , V. Prasolov ¹ , M. Klyushnikov ¹ , A. Korkh ¹ <i>1 Joint Stock Company «Space Rocket Centre «Progress»—Scientific and Production Enterprise «OPTECS»</i> <i>2 MIPT</i>
15:30	Strain-modulated initial stage oxidation of iron surface	Yihan Wu, Wenshan Yu, Shengping Shen <i>State Key Laboratory for Strength and Vibration of Mechanical Structures, Shaanxi Engineering Laboratory for Vibration Control of Aerospace Structures, School of Aerospace Engineering, Xi'an Jiaotong University</i>
15:45	Demonstration of interferometric coronagraphy technology using a nanosatellite	A. Yudaev, I. Ochneva <i>MIPT</i>

