

## 1<sup>st</sup> Moscow International Conference on mm/submm Astronomy

### Program

April 12<sup>th</sup> Monday | General aspects of mm/submm astronomy, sites, instruments

Chair: Yuri Shchekinov

10:00 **Nikolay Kolachevsky** (Director of Lebedev Physical Institute RAS), Welcome  
10:10 **Yuri Balega** (Vice-President RAS), The future of the millimeter range astronomy in Russia  
10:40 **Sergey Likhachev** (Head of ASC LPI, PI of the Millimetron project), Introduction to Millimetron

### 11:10 Coffee

11:30 **Vladimir Soglasnov**, On the early history of millimeter and submillimeter astronomy in Russia  
12:00 **Vyacheslav Vdovin**, Experimental microwave astroclimate research for development of subTHz astronomy  
12:30 **Marat Mingaliev**, Millimeter astronomy in Russia: what, where and when?

### 13:00 Lunch

Chair: Vyacheslav Vdovin

14:00 **Thijs de Graauw**, Submillimeter and Millimeter Astronomy: Evolution and Future Perspectives  
14:40 **Massimiliano Tordi & Mattia Scomparin**, On the development of radio-antennas for mm/sub-mm observations: an industrial perspective  
15:10 **Taehyun Jung**, (E)KVN: Simultaneous Multi-Frequency (18 - 150 and 230GHz) VLBI System  
15:40 **Vladimir Khaikin**, On the projects of ground-based MM and SubMM telescopes and the development of the concept of the ESMT project

### 16:10 Coffee

16:25 **Aleksander Lapinov**, On the advantages of the Eastern Pamirs for sub-mm astronomy  
16:55 **Tatiana Khabarova**, Study of best sites for ground based mm-wave radio telescopes  
17:10 **Artem Shikhovtsev**, Astroclimatic characteristics of the Sayan Solar Observatory and the Special Astrophysical Observatory sites for ground-based mm/submm astronomy

17:40 – 19:00 Discussion (Chair – **Andrey Khudchenko**): sites, instruments & wine, dancing, singing etc ... on-line

## April 13<sup>th</sup> Tuesday | Instruments

Chair: Igor Zinchenko

09:00 **Maria Salatino**, mm-astronomy from the Tibetan plateau: the ALICE-1 telescope

09:30 **Andrey Khudchenko**, SIS Receivers for Radio Astronomy – overview of existing instrumentation

10:00 **Grigori Goltsman**, Development and application of terahertz hot electron bolometers

10:30 **Valery Koshelets**, Superconducting sub-THz receivers for space and ground-based radio astronomy

### 11:00 Coffee

11:15 **Ivan Tret'yakov**, HEB mixer based THz astronomical instruments

11:45 **Andrey Baryshev**, Direct Detectors for Radio Astronomy

12:15 **Mikhail Tarasov**, SINIS detector arrays for radioastronomy

12:45 **Alexander Sobolev**, 2D arrays of Cold Electron Bolometers based on SINIS structures

### 13:00 Lunch & Posters

**Kirill Maslennikov**, Shorbulak (Eastern Pamirs) vs Chajnantor Plateau (Chilean Andes, Atacama Desert): a brief astroclimatic comparison

**Aleksandr Malinovsky**, Catalog of supermassive black holes for interferometric observations

**Petr Zemlyanukha**, Prospects for 3D printing of quasi-optical and waveguide systems

Chair: Vyacheslav Vdovin

14:00 **Alexey Rudnitsky**, Capabilities and geometry of VLBI mode in Millimetron Mission

14:30 **Roman Cherny**, Onboard electronic complex

15:00 **Evgeny Golubev**, Millimetron payload module design

15:30 **Viktor Bujakas**, New Precise Petal-type Reflector for Space Radio Astronomy

### 15:45 Coffee

Chair: Andrey Khudchenko

16:00 **Alexander Shurakov**, Status of THz Schottky diode technology for radio astronomy in Russia and worldwide

16:20 **Leonid Kuzmin**, Multifrequency receiving systems based on planar slot antennas with cold-electron bolometers for radio telescopes CORE and LSPE

16:40 **Andrey Pankratov**, Cold-Electron Bolometers for Radio Astronomy Missions

16:55 **Igor Bubukin**, Comparative analysis of the propagation conditions of millimeter radio waves at the NIRFI NNSU "Karadag" site (southeastern Crimea), the "Suffa" plateau (southern Uzbekistan) and three IAA RAS test sites located in different climatic zones of the Russian Federation

17:10 **Igor Rakut'**, Microwave meteorological station to determine the integral humidity of the atmosphere sites

**17:25 – 19:00 Discussion (Chair – Andrey Baryshev): Instruments & wine, dancing, singing etc ... on-line**

## April 14<sup>th</sup> Wednesday | Cosmology

Chair: Dmitrii Novikov

09:00 **Sergey Pilipenko**, Unveiling the obscured high-redshift Universe with Millimetron

09:30 **Biman Nath**, The enigmatic star forming galaxy at  $z=11$

10:00 **Evgenii Vasiliev**, FIR from high- $z$  SMBHs

10:30 **Igor Novikov Jn**, Shock-excited Infrared signatures in ULIRGs

### 10:45 Coffee

11:00 **Paolo de Bernardis**, Millimetron, Galaxy Clusters and the Large-Scale Structure of the Universe

11:30 **Dmitry Novikov**, Anisotropic SZ effect and independent estimation of the CMB anisotropy low multipoles

12:00 **Gemma Luzzi**, Cosmology with the SZ spectrum: measuring the Universe's temperature and expansion with galaxy clusters

12:30 **James Creswell**, Asymmetry of the CMB map: local and global anomalies

### 13:00 Lunch

Chair: Alexey Rudnitsky

14:00 **Andrea Ferrara**, Dusty Galaxies in the Epoch of Reionization

14:40 **Sergey Balashev**, Outflows from the type I quasar at high- $z$ : molecular gas in the host galaxies

15:10 **Luca Graziani**, The assembly of dusty galaxies at  $z>4$

### 15:40 Coffee

16:00 **Carlotta Gruppioni**, Obscured Star-Formation in the Early Universe

16:20 **Laura Bisigello**, Simulating the infrared sky with a SPRITZ

16:40 **Luigi Spinoglio**, Galaxy Evolution studies in the IR and submm from the space

17:00 **Francesco Salvestrini**, Unveiling the AGN intrinsic power and its effect on the host-galaxy ISM

17:20 **Sergey Drozdov**, Emission from hot bubbles by a quiescent star formation

17:35 – 19:00 Discussion (Chair – Yuri Shchekinov): Cosmology & wine, dancing, singing etc ... on-line

## April 15<sup>th</sup> Thursday | Relativistic Astrophysics

Chair: **Yuri Shchekinov**

09:00 **Andrey Andrianov**, Simulations of M87 and Sgr A\* imaging with the Millimetron Space Observatory on near-Earth orbits

09:30 **Sergey Chernov**, MHD modeling of shadows and rings from black holes. Problems and it's solutions

10:00 **Evgeniya Kravchenko**, Polarimetry of active galactic nuclei in ground and space VLBI observations

10:30 **Yuri Kovalev**, Probing the event horizon scales with multi-frequency polarization Space VLBI visibility tracking

### 11:00 Coffee

11:15 **Gabriele Giovaninni**, High resolution – high frequency properties of relativistic jets in AGN

11:45 **José Gómez**, Accretion onto supermassive black holes and jet formation: prospects for future ngEHT and space mm-VLBI observations

12:15 **Andrey Lobanov**, Millimetre VLBI probes of physics down to the event horizon scale

12:45 **Elena Mikheeva**, Black Hole Shadow Observations with Space-Ground Interferometers

### 13:00 Lunch

Chair: **Sergey Pilipenko**

14:00 **Tatiana Larchenkova**, Gravitational lensing and Hubble tension problem with Millimetron

14:30 **Andrei Doroshkevich**, Lyman-alpha emitters and first galaxies with Millimetron

15:00 **Arina Morgunova**, Investigation of the Hubble tension problem in the case of a time-dependent dark energy parameter

15:15 **George Bendo**, The Millimeter Valley Between Dust and Synchrotron Emission in Nearby Galaxies

### 15:45 Coffee

16:00 **Vyacheslav Dokuchaev**, Images of black holes

16:30 **Alexander Zakharov**, Orbits of bright stars near the Galactic Center as a tool to test gravity theories

16:50 **Maxim Pshirkov**, Radio transients: current status

17:20 **Andrey Ermash**, Sources of confusion noise of the Millimetron Mission

17:35 – 19:00 Discussion (Chair – **Andrey Baryshev**): Relativistic Astrophysics & wine, dancing, singing etc ... on-line

## April 16<sup>th</sup> Friday | ISM & Water

### Chair: Valery Shematovich

09:00 **Anna Punanova**, Water trail with Millimetron

09:30 **Dmitrii Wiebe**, (Sub)millimeter observations of organic molecules

10:00 **Sergey Kalensky**, Images of Class I methanol masers in the regions of low-mass star formation

10:30 **Maxim Voronkov**, Millimetre facilities and maser surveys in Australia

### **11:00 Coffee**

11:15 **Philippe Andre**, Filamentary star formation and the role of magnetic fields on various scales

11:45 **Lev Pirogov**, Kinematics of filaments and cores associated with regions high-mass star formation

12:15 **Maria Kirsanova**, Non-stationary photodissociation regions around young massive stars

12:30 **Alisher Hojaev**, Scientific tasks for studies of galactic molecular clouds with RT-70

12:45 **Ilya Kovalenko**, Turbulence in gas-dust optically thick interstellar clouds: radiation-convective model

### **13:00 Lunch**

### Chair: Evgenia Kravchenko

14:00 **Valery Shematovich**, Studies of the ocean worlds in the Solar and exosolar planetary systems in the MM and subMM astronomy

14:30 **Dmitrii Sokoloff**, Symmetries of Magnetic Fields Driven by Spherical Dynamos of Exoplanets and Their Host Stars

15:00 **Maria Pashentseva**, Modeling magnetic fields in accretion discs, taking into account convective flows

15:15 **Natalya Kargaltseva**, Primary disks and their observational appearance in collapsing magnetic rotating protostellar clouds

15:30 **Sergey Khaibrakhmanov**, Physical and chemical vertical structure of the magnetostatic accretion disks of young stars

15:45 **Dmitrii Ladeyschikov**, Relation between star formation traced by water masers and physical parameters of dust clumps in the submillimeter wavelength range

### **16:00 Coffee**

16:15 **Igor Zinchenko**, Ground-based and space-borne mm/submm astronomy in studies of ISM

16:45 **Andrey Sobolev**, Millimeter and submillimeter transient events in star formation

17:15 **Nadezhda Shakhvorostova**, Probing star-formation in Infrared Dark Clouds with mm-wave masers using Onsala 20-m RT

17:35 **Lucero Uscanga**, Millimeter observations of maser-emitting planetary nebulae

**18:00 – 20:00 Discussion (Chair – Dmirii Wiebe): Water, complex molecules, disks & wine, dancing, singing etc ... on-line**