ACES Workshop 2019

28-29 Oct 2019 Paris (France)

APPLICATION PROCEDURE FOR AN INTERNATIONAL EXPERIMENT ON THE ISS RUSSIAN SEGMENT

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SCIENTIFIC & TECHNICAL
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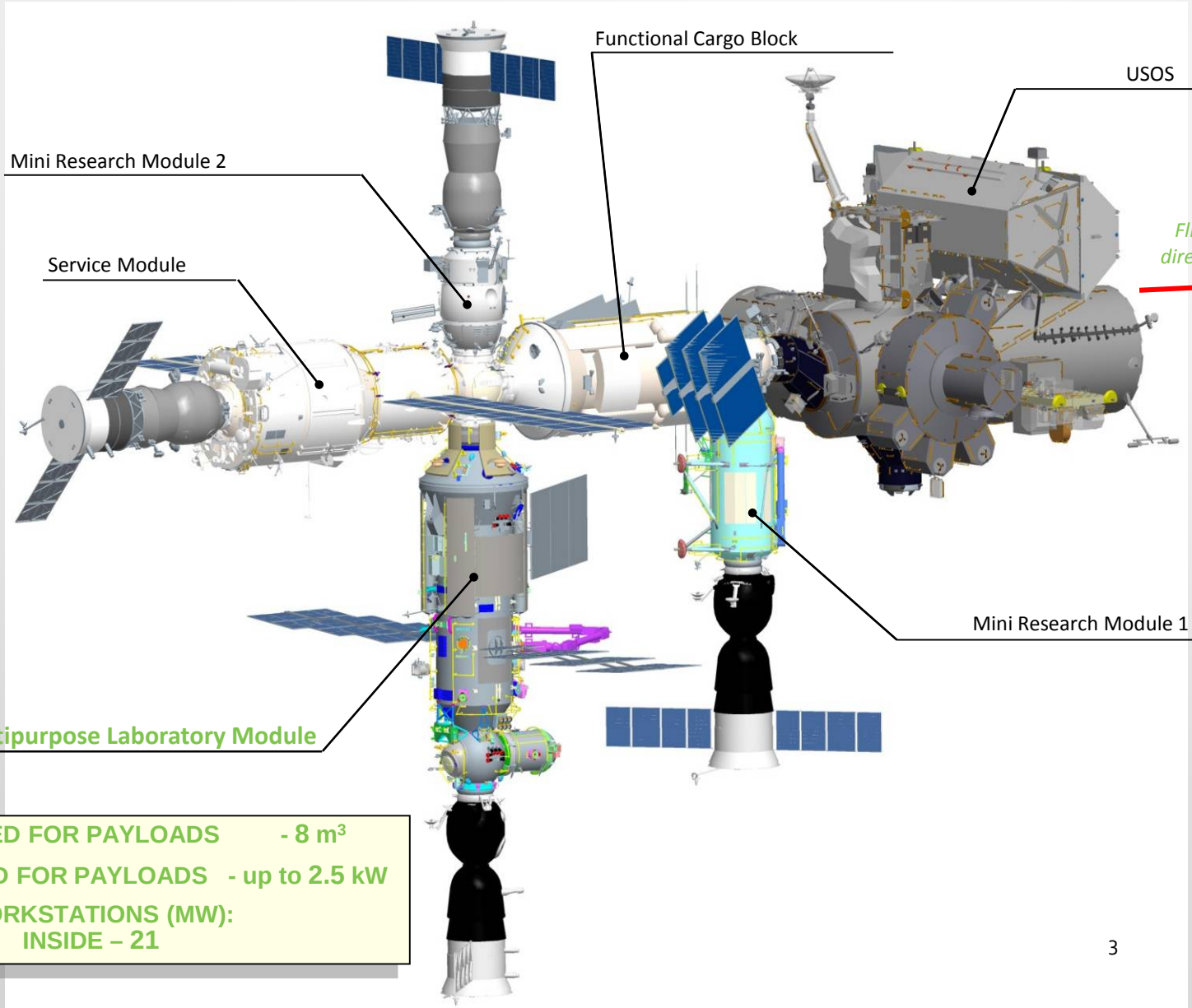
EN RU

UNIQUE SPACE LAB

300 Unique Experiments across the spectrum of scientific activities are being held.

The ISS Russian segment



- VOLUME ALLOCATED FOR PAYLOADS - 8 m^3
- POWER ALLOCATED FOR PAYLOADS - up to 2.5 kW
- MULTIPURPOSE WORKSTATIONS (MW):
  OUTSIDE – 13 INSIDE – 21

Joint Stock Company «Central Research Institute for Machine Building»
Korolev, Moscow Region, 141070, Russia

Research and experiments can be carried out on the ISS Russian Segment (ISS RS) and the ISS American Segment (ISS AS) together with foreign ISS partners. Experiments on the board should be completed no later than in 2024.

I will briefly describe how an international team can apply through Russian research institutions or universities to the Scientific & Technical Advisory Council on Scientific & Applied Research and Experiments onboard Manned Space Complexes for a new space experiment in order to get support from the Long-Term Program of Scientific and Applied Research and Experiments Planned on the ISS Russian Segment. The latter has already financed about 300 onboard experiments.

Председатель
КНТС Роскосмоса,
член-корреспондент РАН

_____ В. А. Соловьев

«19» декабря 2018 г.

Long-Term Program of Scientific and Applied Research and Experiments Planned on the ISS Russian Segment till 2024.

Renewed on December 19, 2018

ДОЛГОСРОЧНАЯ ПРОГРАММА НАУЧНО-ПРИКЛАДНЫХ ИССЛЕДОВАНИЙ И ЭКСПЕРИМЕНТОВ, ПЛАНИРУЕМЫХ НА РС МКС ДО 2024 ГОДА

Заместитель председателя КНТС,
начальник Центра ФГУП ЦНИИмаш

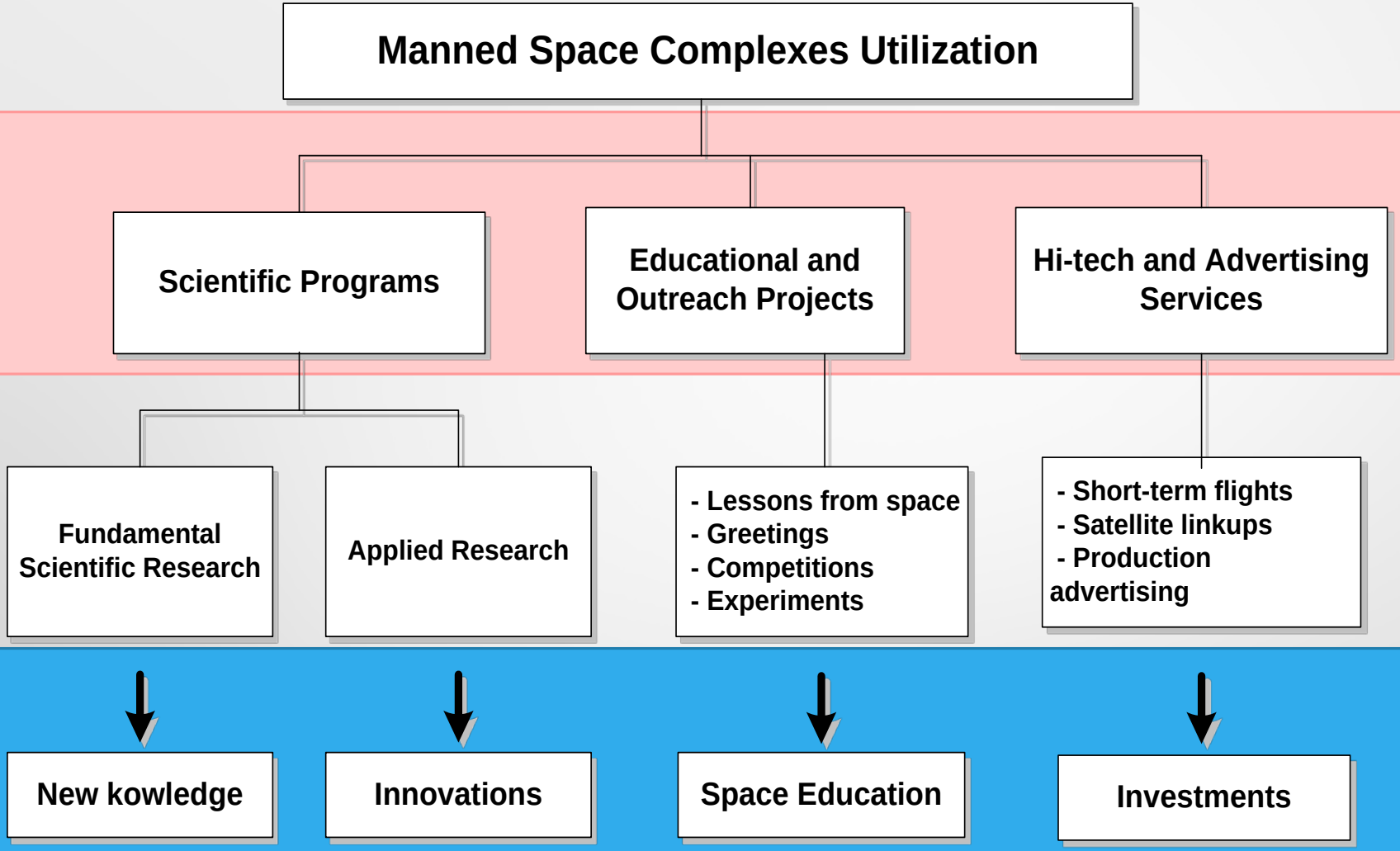
_____ Г.Ф. Карабаджак

«18» декабря 2018г.

Заместитель председателя КНТС,
заместитель генерального конструктора
ПАО «РКК «Энергия» им. С.П. Королёва»

_____ А.В. Марков

«18» декабря 2018г.


Manned Space Complexes Utilization
Scientific Programs
Educational and Outreach Projects
Hi-tech and Advertising Services
Fundamental Scientific Research
Applied Research
- Lessons from space
- Greetings
- Competitions
- Experiments
- Short-term flights
- Satellite linkups
- Production advertising
New kowledge
Innovations
Space Education
Investments

Unique capabilities of the ISS allow to scientists of over the world to use it:

- For investigation of prolonged weightlessness impact to a human organism with the aim of the obtained knowledge application to both the future space exploration and the Earth's medicine and human health promotion
- As a unique laboratory in space, where study of fundamental physical, chemical and biological processes in conditions of vacuum and absence of gravity is possible
- As a test-bench for in-flight testing and fine-tuning of new instruments and methods for observation of Earth and space
- For getting samples of products in orbit, as well as for utilization of knowledge accumulated at space research in unique environment with the aim of the Earth's technologies improvement

SCIENTIFIC & TECHNICAL
ADVISORY COUNCIL

ABOUT STAC

The Scientific & Technical Advisory Council (STAC) on Scientific & Applied Research (SAR) and Experiments onboard Manned Space Complexes was established by a joint decision of the Russian Aviation and Space Agency (precursor of the current Federal Space Agency) and the Russian Academy of Sciences in 1994 for the purpose of effective development of SAR programs for manned space complexes.

STAC SECTIONS

SPACE BIOLOGY AND PHYSIOLOGY

SPACE MATERIAL SCIENCE

EARTH OBSERVATION FROM SPACE

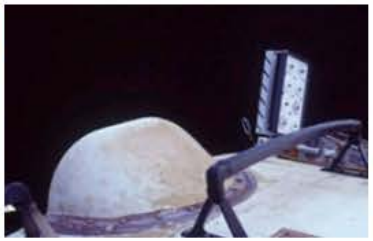
SOLAR SYSTEM

EXOATMOSPHERIC ASTRONOMY

SPACE RAY PHYSICS

ENGINEERING RESEARCH AND EXPERIMENTS

ADVANCED TECHNOLOGIES FOR SPACE EXPLORATION



SPACE POWER AND PROPULSION SYSTEMS

How to enroll into the Long-Term Program of Scientific and Applied Research and Experiments Planned on the ISS Russian Segment?

Step 1. Team building with signed protocols (MOU, Minutes)

Step 2. Two documents:

1) APPLICATION FOR TARGETED WORK
2) SCIENTIFIC AND TECHNICAL SUBSTANTIATION OF TARGET WORK

Step 3. Approval in general of the Scientific & Technical Advisory Council (STAC) on Scientific & Applied Research (SAR) and Experiments onboard Manned Space Complexes.

Step 5. Approval by the JSC «TsNIIMash» engineering team and by cosmonauts in charge.

APPLICATION FOR TARGETED WORK

- The full name of the TW and its code
- Full name and details of the Director of the TW
- Section of the Long-Term Targeted Work Program (DPSR)
- Data on the supervisor of studies
- Executive Director of the Central Director
- Co-executing organizations (including foreign ones) of the Central Administration with an indication of the work performed
- The content of the proposed target work: goal; key space flight factors used in the TW; estimated timelines for holding the CR on board the ISS
- The planned result of intellectual activity
- End user of the results
- Initial data on pre-flight and on-board implementation of the TW:
- The need to develop equipment; Parameters; Potential developer
- Initial data for on-board implementation of the TW
- Economic (cost) indicators of the TW
- Cost of equipment
- Financing by the director, consumer

SCIENTIFIC AND TECHNICAL SUBSTANTIATION OF THE TARGET WORK

- Goal and objectives;
- Brief history and currents state of the problem under study;
- Importance;
- The existing scientific and technical groundwork;
- Information about a created prototype;
- Publications, patents and inventions;
- Justification of conducting the study on the manned space complex;
- Justification of the need to attract a foreign co-workers;
- Description of activities (experiments, measurements, observations);
- The main target parameters of scientific research: measured characteristics, measurement ranges, accuracy requirements, etc.;
- The name of the organization, scientific and technical grounds, temporal terms and estimated cost;
- Availability of the end user of the results, estimated list of results for the head database of Roscosmos.

POSTER on STE-QUEST Workshop - ESTEC, Noordwijk, The Netherlands, 22-23 May 2013

Continuous Material Space with Local Equivalency of Inertial and Gravitational Mass Densitiescan be justified by Precise Clocks

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Non-empty space paradigm for reality can be described in mathematical terms of Einstein's General Relativity (GR), but with continuous inertial masses integrated into the very spatial structure of their gravitational fields. Joint geometrization of the continuous particle and its GR field reveals the physical meaning of 1902 Ricci scalar R as the scalar mass density of material space, which is the flat 3D section of the curved 4D pseudo-Riemann manifold. The empty-space GR predicts Schwarzschild time dilation $(d\tau-dt)/dt\equiv\sqrt{g_{oo}}-1=\varphi(1-\varphi/2c^2)/c^2$ in negative weak potential φ, while non-empty space relativistic physics corresponds to $\varphi(1+\varphi/2c^2)/c^2$. The Newton potential φ is time-varying in the Earth-Sun-Moon system and precise clocks can distinguish non-empty space reality from the empty space model with non-physical delta-operator density of particles.

- **Non-empty (material) space is continuously filled everywhere by equal passive (inertial μ_p) and active (gravitational μ_a) mass-densities causing local metric stress W(x)**
- **Ricci curvature $R \equiv g^{\mu\nu}R_{\mu\nu} = 8\pi G(\mu_p + \mu_a)/c^2$ is the scalar mass density of material space**

empty space paradigm with

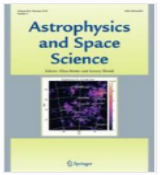
$$(d\tau - dt)/dt \equiv \sqrt{g_{oo}} - 1 \approx \varphi(1 - \varphi/2c^2)/c^2$$

non-empty space paradigm with

$$\sqrt{g_{oo}} - 1 \approx \varphi(1 + \varphi/2c^2)/c^2$$

Relevant publications

Springer Link

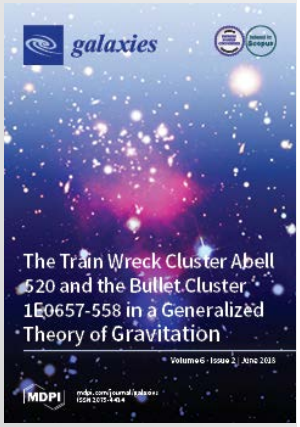


Astrophysics and Space Science
February 2018, 363:39 | Cite as

Gravitational attraction until relativistic equipartition of internal and translational kinetic energies

Authors | Authors and affiliations

I. E. Bulyzhenkov



Galaxies **2018**, *6*(2), 60; https://doi.org/10.3390/galaxies6020060

Open Access | Article

Cartesian Material Space with Active-Passive Densities of Complex Charges and Yin-Yang Compensation of Energy Integrals

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In Press, Corrected Proof

Thomson 4/3 problem leads to nonlocal continuous charges with Poincaré radial stresses and zero electromagnetic inertia

Igor E. Bulyzhenkov


thank you
рахмат
danke
謝謝
ngiyabonga
teşekkür ederim
Баярлалаа
mersi
kia ora
barka
spas
welalin
tack
mahalo
tapadh leat
спасибо
faafetai lava
vinaka
спасибі
blagodaram
dank je
misaotra
paldies
grazzi
matondo
gracias
хвала
kiitos
dankie
nanni
nandri
dhanyavad
mauruuru
köszönöm
asante
manana
obrigada
tenki
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তোমাকে ধন্যবাদ
감사합니다
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merci