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Implementation of a micro-satellite program in the infrastructure of the Russian segment of the international space station

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JSC RSC "Energia" and SRI RAS as part of the "Long-term program of scientific-applied researches and experiments on the ISS RS", in accordance with the decision of the Coordinating Scientific and Technical Council (KNTS) of the Federal Space Agency for programs of scientific and applied research and experiments on manned space complexes, the first in the world implemented the "dual-launch" with transport cargo vehicle (TGC) the "Progress" and the ISS RS. In accordance with this technology, the microsatellites composed of other TGC goods are delivered to the ISS RS, and then after performing the TGC primary function for the delivery of goods, is re-starting the engines of the "Progress" and brings the microsatellite to a higher orbit (500 km). This scheme increases the economic efficiency of associated output for the TGC microsatellites weighing up to 100 kg and increases the ballistic time of their existence no less than 5 times. The introduction of this technology opens up wide prospects for fundamental space research and the Russian Universities the possibility of launching their own satellites for scientific and educational purposes. The paper presents the experience of implementing this technology at the launch of the scientific micro-satellite "Chibis-M" (mass 40 kg), established the Russian Academy of Sciences to conduct a comprehensive space experiment (SE) on the study of energy of high-altitude lightning discharges in a wide range of electromagnetic radiation. At present IKI in preparation are similar to the tasks of the SE on the microsatellite "Chibis-AI" and "Trabant" (2019-2021), included in the program of scientific and applied research on the ISS RS.

Biography

Stanislav I Klimov is the Head of the Laboratory for Electro-Magnetic Emissions Investigation, Department of Space Plasma Physics, Space Research Institute (IKI), Russian Academy of Sciences. He graduated from the Department of Physics, Moscow State University (1966), received PhD in Physics-Mathematics in 1984, Doctor of Sciences in Physics-Mathematics in 1994. At present, he is the Scientific Manager of ASPI experiment INTERBALL TAIL PROBE and APW-R Relict-2 wave and field experiments and WEC Cluster wave experiment Co-I. The laboratory he leads also includes the electrostatic and magnetic cleanliness and EMC group. Now, this group uses the experience from the previous projects for the study of the electro-magnetic environment of the MIR orbital station and in the future experiments of the International Space Station. He has more than 100 publications. His research interest includes: waves in solar wind/magnetospheres and comet plasma interactions, magnetospheric convection and magnetosphere-ionosphere coupling, interaction of the supper large bodies (orbital station) with ionosphere.

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