

Agreement

on Scientific Cooperation between the Institute of Radio Astronomy National Academy of Sciences of Ukraine (IRA NASU) and the Arctic University of Norway (UiT)

The research institutions, **Institute of Radio Astronomy National Academy of Sciences of Ukraine (IRA NASU)** (Kharkiv, Ukraine) and **the Arctic University of Norway (UiT)** (Tromsø, Norway), adopting principals of equality and effective partnership, and considering:

- Twenty year long experience of successful scientific collaboration between IRA NASU and UiT in the field of mutual investigations of geospace;
- The availability in both institutions of modern research facilities, observation techniques, physical models and data processing software for studies of near Earth plasma environment above Arctic, Antarctic and mid latitude regions;
- UiT membership and affiliated membership of the IRA NASU in the EISCAT Scientific Association;
- The importance of geospace studies for fundamental problems of plasma physics and many practical applications like: global navigation, communication, TV and radio broadcast, monitoring of Earth's surface and World Ocean, atmospheric and space weather forecast etc.

Have agreed to explore the possibilities for and initiate scientific cooperation in the fields of **geospace researches**. The major long-term goal of the UiT is to develop, in collaboration with the EISCAT, a new generation of incoherent scatter radar EISCAT 3D for three-dimensional diagnostic of dynamic ionospheric processes above the Nordic polar region of Europe. The principal scientific concept proposed by the IRA NASU is to develop and implement 3D HF and UHF diagnostic of natural and stimulated ionospheric inhomogeneities. These facilities and techniques will be used to conduct the following scientific tasks:

- Studies and visualization of a wide range of natural and stimulated plasma fluctuations in the auroral region and at mid-latitudes, particularly: artificial plasma turbulence and electron acceleration, polar mesospheric summer and winter echoes, naturally enhanced ion acoustic lines, field-aligned inhomogeneities, and traveling ionospheric disturbances;
- Investigations of the transfer mechanisms of powerful geospace disturbances top-down (from interplanetary space and Sun) and bottom-up (from Earth's surface and troposphere);
- Multiposition studies of worldwide lightning activity as indicator of global climate changes.

To achieve the stated goals, the parties will:

- Carry out joint research, field works and observational campaigns on the observatories of UiT, EISCAT and IRA NASU;
- Improve existent and develop new observation technique and databases in the field of interest;
- Implement joint projects within the framework of various international and national programmes and within fields of common interests;
- Exchange researchers (with a specific focus on PhD students, and young scientists), who will worked on joint research projects. Exchange may be organized as practice/training courses; workshops; seminars; conferences; guest employee/scientists visits (including training, skills mastering, giving lectures etc.);
- Exchange scientific and educational-methodological materials and literature;
- Search for funding for joint scientific projects on a bilateral basis as well as for wider scientific programmes with funding from international organizations;
- Publish results of joint research in international and national scientific journals and reports;

- Reports and publications on the results of joint studies are published together or separately as mutually agreed between IRA NASU and UiT;
- Before providing results of joint projects to other parties a mutual agreement should exist between IRA NASU and UiT;

The agreement is valid for a period of 5 years after signing by the parties.

Further details of cooperation (time schedule, responsibilities of the parties, financial obligations, results of joint research, copyrights, etc.) will be agreed upon and specified by as separate protocols (working plans) for each joint project.

Any changes to this Agreement shall be subject to the written consent of both parties.

This Agreement may be terminated by either party of any time provided that the terminating party gives written notice of its intention at least six months prior to termination

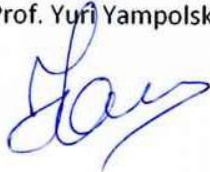
Any dispute arising under the terms of this Agreement shall be referred to an independent mediator as agreed by both parties.

Nothing in the Agreement shall be construed as being legally binding.

The Agreement is signed in two copies in English, one for each party. Both copies are of equal legal force.

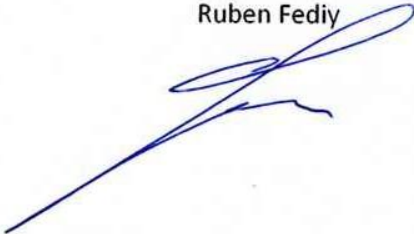
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On behalf of IRA NASU

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On behalf of

Arctic University of Norway (UiT)
Vice Rector for Research and Development
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October 14, 2013

