

# IMPORTANCE AND EFFECTIVENESS OF COOPERATION BETWEEN SUFFA INTERNATIONAL RADIO OBSERVATORY AND JIZAKH STATE PEDAGOGICAL INSTITUTE

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**Abstract.** *The importance and effectiveness of the formation of practical skills in teaching students of the direction "Methods of teaching physics and astronomy" of the Jizzakh State pedagogical institute of the International Radio Observatory "Suffa" RT-70.*

**Key words.** *radioastronomy, telescope, radio telescope, education, science, pedagogy, institute, efficiency, problem, solution, collaboration, communication*

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**Аннотация.** *Важность и эффективность формирования практических навыков в обучении студентов направления «Методика преподавания физики и астрономии» Джизакского Государственного педагогического института Международной радиообсерватории «Суффа» РТ-70.*

**Ключевые слова.** *радиоастрономия, телескоп, радиотелескоп, образование, наука, педагогика, институт, эффективность, проблема, решение, сотрудничество, общение*

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**Annotatsiya.** *“Suffa” RT-70 halqaro radioobservatoriyasining Jizzax Davlat pedagogika instituti “Fizika va astronomiya o`qitish metodikasi” yo`nalishi talabalariga bilim berishda amaliy ko`nikmalarni shakllantirishdagi ahamiyati va samarasi ko`rsatib o`tilgan.*

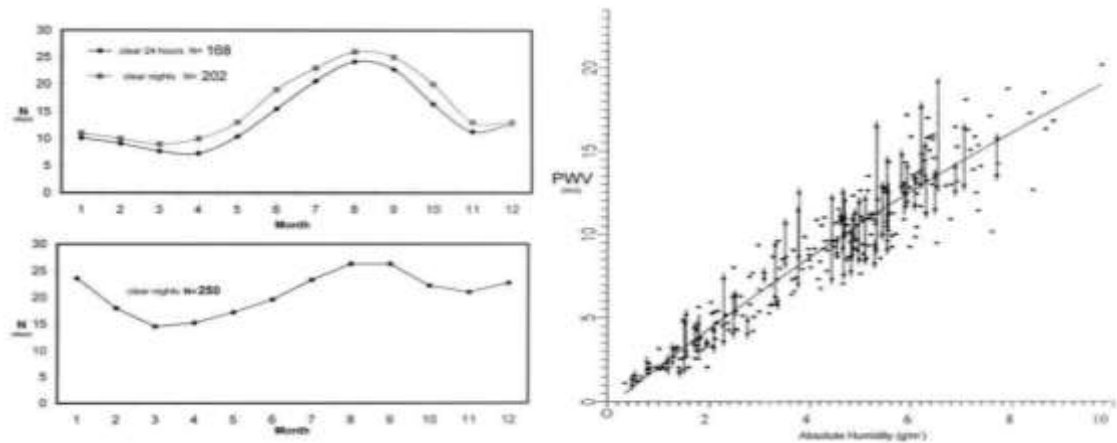
**Kalit so'zlar.** *radioastronomiya, teleskop, radioteleskop, ta'lim, ilmiy, pedagogika, institut, samaradorlik, muammo, yechim, hamkorlik, aloqa*

Construction of the Radio Telescope-RT-70 observatory on the Suffa Plateau in the Zaamin district of Jizzakh province began in 1981 but was stopped in 1991.



Location of the Suffa RT-70 radio telescope

From 1981 to 1991, the radio telescope was used as a meteorological station to monitor the astroclimate.



Left panel: distribution of clear time in 1981-1991 – general cloudiness (top left) and lower atmosphere cloudiness (bottom left). Right panel : correlation between absolute humidity and precipitable water vapour (PWV)

Currently, in accordance with the agreement between the Russian Academy of Sciences and the Academy of Sciences of Uzbekistan, work has begun on refinancing and amendments to the instructions. The commissioning of the observatory is scheduled for 2025.

Device information;

The antenna device is designed to operate in the wavelength range of up to 8 mm.

**antenna type:** double-glazed - according to the Gregory system

- diameter of the main window - 70 m;
- diameter of the auxiliary window - 7 m;
- antenna height - 86.36 meters;
- the weight of the moving part is ~ 5000 tons;

Effective surface area of the antenna:

- transmission - 2000 m<sup>2</sup> (in the range of 39 cm) and 2600 m<sup>2</sup> (in the range of 6 cm);
- reception - 2500 m<sup>2</sup>.

**antenna system:**

- full rotation;
- At height - from 0 to 90 degrees;
- Azimuth -  $\pm 270$  degrees;
- width of the radiation pattern - from 2 to 18 arc minutes, depending on the frequency range;
- signal accuracy - up to 10 arc seconds.

**Antenna speed:**

in slow speed mode:

- in azimuth - from 2.5 angles. s/s 4 angles each. min/s;

- in height - from 2.5 angles. s/s up to 1 bow. min/s;  
in quick mode:

- in azimuth - from 0.5 to 30 angles. min/s;
- at height - from 0.5 to 15 arc seconds. min/s.

### **Research directions:**

- Background radiation at a wavelength of 1-10 mm
- Cosmology
- Astrophysics
- Extragalactic astronomy
- Galactic physics
- Galactic objects
- Objects of the solar system - the chemical composition of the atmosphere of volcanic gases on giant planets, comets and planetary satellites
- Exploring stars with planetary systems
- Basic astrometry
- Coordination and temporary assistance. Geodynamics is the position of the Earth's poles in space.
- High-precision distance detection
- Determining the coordinates of spacecraft with high accuracy

Currently, a cooperation agreement has been signed with the Academy of Sciences of Uzbekistan and the Department of Physics and Methods of Teaching Jizakh State pedagogical institute. As a result of strengthening this partnership, a team of 53 professors and talented students will be involved in 2019 to participate in research and practice at the Suffa Radio Observatory in Zaamin district of Jizzakh region. Of course, such partnerships play an important role in the development of young radio astronomy and the formation of students' skills. The internship at the radio observatory serves to develop students' creative thinking.

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