COSMOS 423 LAUNCHED CARRYING SCIENTIFIC EQUIPMENT

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[Text] Moscow--Scientific satellite "Cosmos 423" was launched on Thursday in the Soviet Union. The satellite has been put into orbit with the parameters: initial period of revolution 92.2 minutes, maximum distance from the surface of the earth 511 kilometers, minimum distance from the surface of the earth 282 kilometers, inclination of the orbit 71 degrees.

Apart from scientific equipment on board the satellite there is a radio system for precise measurement of the elements of the orbit and a radio-telemetric system for transmission of data to earth on the work of instruments and equipment. Equipment is working normally.

SCIENTISTS EXPLAIN NEW SOLAR RADIOTELESCOPE

Moscow PRAVDA 23 May 71 p 3 L

[Correspondent N. Kamenskiy interview with Soviet scientists Stepanov and Smolkov]

Sibizmir - 2216422

[Text] Scientists of the Siberian institute of earth magnetism, the ionosphere, and radiowave propagation have started a dioramic test of a solar radiotelescope project. Its complex of structures will occupy approximately 50 hectares in the Bodar area near Baykal. Our correspondent asked institute director, USSR Academy of Sciences corresponding member, Vladimir Yevgenyevich Stepanov and radioastronomy laboratory chief Gennadiy Yakovlevich Smolkov to comment on this new project.

Question: What has necessitated the construction of such an instrument, Vladimir Yevgenevich?

Answer: The 24th party congress directives provide for scientific research in the new 5-year plan with the aim of developing long-distance communications, television, and weather forecasting. Scientists are also continuing fundamental research in the sphere of astrophysics, interplanetary space, solar physics, and solar-terrestrial communications.

Before us is the unsolved enigma of the sun--sunsports, chromonspheric flares, and phenomena accompanying them. During solar flares a colossal amount of energy is released in the form of wave and corpuscular radiation. The former reach the earth in 8.3 minutes, and the latter in a matter of several days, interrupting radio communications, upsetting the magnetic field, changing the weather, and even affecting the health of people suffering from cardio-vascular complaints. The radiation level of the earth's environment during such periods increases to such an extent that space flights become dangerous.

In order to learn how to forecast these processes and, consequently, predict the geophysical consequences of solar flares, it is essential to have a complete concept of their mechanism and dynamics.

Question: But are there not many solar observatories in the world already?

Answer: Yes, there are, and our institute has several optical telescopes of various kinds. They permit us to observe the solar surface--the photosphere and the lower strata of the solar atmosphere, the chromosphere. With the aid of an artifical solar eclipse in a coronographic telescope it is also possible to observe the upper strata of the solar atmosphere--the cornoa--but not in a direct line with the earth but at an angle of 90 degrees.

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Solar Magnetograph Described in Detail

During the years 1963-1966 specialists at the Sayan Observatory of the SibIZMIR (Siberian Institute of Terrestrial Magnetism, Ionosphere and Radio Wave Propagation) have worked on the design and testing of instruments for measuring the Zeeman and Doppler effects in the absorption and emission lines of solar plasma. This article describes in detail these instruments designed for the simultaneous registry of magnetic fields and radial velocities in one and three lines. The principle of these total vector and three-line registry magnetographs differs from those at the Crimean Astrophysical Observatory and IZMIRAN primarily in the method for modulating the polarized component of the light flux carrying information on strength and orientation of the magnetic field vector and in certain design features and therefore these aspects are stressed. In the variant for measurements in one line it is possible to determine three components of the magnetic field strength vector: velocity of plasma movement along the line of sight, emission intensity in the central part of the magnetically active line and the intensity of the continuous spectrum near the line. The instrument is designed for operation with a solar telescope and spectrograph with the photometer in a light-insulated part of the spectrograph. The optical system and block diagram of the instrument are shown in Figures 3 and 4 in the text. The magnetograph in the three-line variant is for determining in the first line the three components of the vector of magnetic field strength, the velocity of plasma movement along the line of sight, emission intensity at the center of the magnetically active line, and intensity of the continuous spectrum near the line; in the second and third lines measurements are made of the longitudinal component of the vector of magnetic field strength, velocity of plasma movement along the line of sight and emission intensity at the center of the line. Figures 7 and 8 in the text are a schematic representation of the path of the rays in the optical system and a block diagram of the instrument. Instruments of the first type have also been constructed for the observatories of the Academies of Sciences of the Kazakh, Azerbaydzhan and Georgian SSRs.
(Abstract: "Solar Magnetograph of the Siberian Institute of Terrestrial Magnetism, Ionosphere and Radio Wave Propagation," by S. V. Aleksandrovich, D. A. Kuznetsov, V. N. Kozlovskiy, N. N. Lebedev and V. Ye. Stepanov; Moscow, Novaya Tekhnika v Astronomii, No 3, Izd-vo "Nauka," 1970, pp 52-62)

Information on Construction of Six-Meter Telescope

Some of the initial stages preceding the construction of the six-meter telescope are discussed. Initial planning began in 1959 at the State Astronomical Observatory under the direction of Prof. D. D. Maksutov. Subsequent design work was performed for the most part in the Large Telescopes Design Office at the Leningrad Optical-Mechanical Combine in close collaboration with specialists and engineers of the Astronomical Instrument Making Section at the State Astronomical Observatory. The initial plans were approved in November 1960 by the Astronomical Council and a special

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