ON THE SPECTRA OF NONTHERMAL RADIO EMISSION OF THE MILKY WAY AND OTHER GALAXIES

By V. A. Razin

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The frequency spectrum of synchrotron radio emission from relativistic electrons has been calculated, taking into account the ionization and synchrotron losses of energy of the particles. It has been demonstrated that the frequency spectrum of the radio emission of the halo should be somewhat steeper than the spectrum of the flat subsystem in the sources of radio emission if the exchange of relativistic particles between the flat subsystem and halo is impeded. Still steeper should be the spectrum of extragalactic radio emission.

HYPOTHESES ON THE EXTRAGALACTIC ORIGIN OF COSMIC RAYS IN THE LIGHT OF RADIO-ASTRONOMICAL DATA

By V. A. Razin

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The theories of the extragalactic origin of cosmic rays are subjected to a critique. It is demonstrated that if the relativistic electrons were of extragalactic origin, then the radio emission of the metagalaxy would be $10^2$ times greater than the galactic radio emission, while in the spectrum of the radio emission there would be a noticeable maximum at high frequencies.

ON THE POLARIZATION OF THE CRAB NEBULA ON THE WAVELENGTH 20 CM

By V. A. Udaltsov

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The measurements of polarization of the Crab Nebula at 20 cm were made successfully. The results show that there is linear polarization, the value of which is 0.5 per cent.

POSSIBLE METHODS OF CONSTRUCTION OF GIANT RADIO TELESCOPES

By V. V. Vitkevich and P. D. Kalachev

Lebedev Physical Institute

In the Physical Institute of the USSR Academy of Sciences, the possible design patterns of giant radio telescopes are under consideration.

For operation on short-wave bands, there are under consideration two possible design schemes: one with a strong cross-shaped framework within the aperture of the reflector, and the other with automatically regulated powered struts. There is also under consideration a model with flexible supporting cables and a wire reflecting surface.

RADIO EMISSION OF THE TAURUS-A REGION ON 8-MM WAVELENGTHS

By A. D. Kuzmin and A. E. Salomonovich

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The results of an observation of the radio emission of the Taurus-A region at 8-mm wavelengths are given. Two discrete sources of radio emission have been found. The first source is identified with the Crab Nebula. The right ascension of the center of gravity of the radio emission is displaced $5^\circ$ to the east of the optical center of the Crab Nebula. The flux density amounts to 500