

# RATAN-600 MICROWAVE SPECTRAL OBSERVATIONS OF THE SUN – TODAY AND FUTURE

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Problems of solar radio emission study with the help of the RATAN-600 radio telescope are considered. It is shown that the main scientific results were attained due to the continual improvement of instrumental parameters. In the case of solar investigations many new features of active solar plasma were detected, in particular:

- A small-scale radio emission structure of the Quiet Sun (a so-called “radio granulation”);
- Neutral line associated sources in solar active regions;
- Non-thermal radio emission above sunspots groups, so named “the decimetre halo”;
- Cyclotron lines in the active regions;
- Multiple polarization inversions in flare-productive active regions;
- Relations between the double polarization inversions effect at microwaves and Noise Storms activity at meter waves;
- The short-wave increasing of polarization flux before big flares;
- The “darkening” radio emission effect in flare-productive active regions;
- An evolution of polarization flux spectrum before big flares;
- Discovery of micro-bursts and their relation with Noise Storms;
- Detection of a frequency boundary between S- and B-components and others.

Examples of the features listed above are described. A possible future development of solar investigations with RATAN-600 is discussed.