

ASTRONOMY IN SERBIA

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Abstract. A short history of the development of astronomy in Serbia is presented as well as the present situation and scientific results.

The Belgrade Observatory has been founded in 1887, by Milan Nedeljković. He was sent by the government of young independent Serbia to Paris, to study astronomy and meteorology in 1879. It is interesting to see his study programme, as written by the Ministry of Education and Religion, which envisaged two years of astronomy, mathematics, meteorology, mechanics and geodesy. In the third year he was to have practice at astronomical and meteorological institutions in Paris and to continue the study of astronomy and meteorology with the emphasis on the use of astronomical and meteorological instruments. One half of the fourth year he was to be in London and the second half to be devoted to a visit of principal astronomical and meteorological institutions in Europe. He spent 5 years in France, endeavouring to prepare himself well for the important task of founding the first astronomical institution, as well as university-level teaching of astronomy and meteorology in Serbia.

Belgrade Observatory was not only the first astronomical institution in Serbia but likewise a nucleus for the development of meteorology, seismology and geomagnetic research. For more than a century, a pleiad of scientists with an important contribution to the world science and to the scientific life in Serbia, is connected with the activities of Belgrade Observatory.

The second director of this institution was Djordje Stanojević, the first Serbian astrophysicists, who in 19th century published scientific papers in the journal of French Academy of Sciences (*Comptes rendus*). The famous French astronomer Janssen, entrusted him with the direction of the French expedition for the observation of total solar eclipse of 19th August 1887 in Petrovsk (Russia). He constructed a station for the solar research in Sahara and worked there with an international group of astronomers in 1891-1892. He was in addition a professor of physics at the Belgrade University, one of its first rectors and he made an important contribution concerning the electrification of Belgrade and Serbia.

The most famous Serbian astronomer, Milutin Milanković was one of directors of this institution too. He explained why and how glacial periods originated and gave an astronomical basis to the climatological history of our planet. On account of his contribution to the science, a crater on the Moon, another one on Mars and one asteroid, were named after him.

Thanks to the results of the work on the minor planets of the researchers M. Protić (discovered of 33 minor planets) and P. Djurković (6 minor planets) there are minor planets with permanent names 1554 Yugoslavia, 1564 Serbia, 157 Beograd, 1605 Milankovitch, 2244 Tesla...

Good relations and collaboration between Hungarian and Serbian astronomers were initiated by the founders of Astronomical Observatories in Budapest and Belgrade, Miklos Tege Konkoly and Milan Nedeljković, and the report on the Konkoly's visit of Belgrade Observatory in October 1902. is a nice testimony to it.

Currently, Astronomical Observatory in Belgrade has 25 astronomers. Together with 7 astronomers at the Belgrade University, their researches are under the project Physics and Motion of Celestial Bodies. On the large meridian circle are carried out observations of stars for the Hipparchos programme as well as the stars near radio sources. On the large vertical circle planets and fundamental stars have been observed during 1994. During this year have also been observed minor planets, the comet Macholz (1994o), the comet Nakamura - Nishimura - Macholz (1994m) and the comet Borrelly. The work on the analytical and semianalytical theory of the minor planet proper element determination and on the analytical theory of the secular perturbations of the minor planet motion has been continued. The work on the investigation of chaotic nature of the minor planet motion (stable chaos) was started. At large refractor (65cm), 353 measurements of 133 double and multiple systems discovered in Belgrade and 124 measurements of 53 other systems were performed. On the same instrument optical polarization of stellar radiation, in accordance with the existing longterm programme, was investigated. The observation reduction and the preliminary result analysis are in progress. Spectral observations of Solar radiation flux for 31 chosen spectral lines was continued within a program of their examination during a Solar cycle. Their equivalent widths have been measured as well. On the basis of the examination of double star spectral line profiles modulation, by using the method of indirect imaging, the stellar surface structure has been studied. Stark broadening parameters for a number of spectral lines have been investigated and determined. Infrared Mg I spectral lines, important for the Solar plasma diagnostics, have been investigated. The influence of ion-atom radiative collisions on the continuous optical spectrum in Solar plasma and in helium rich DB white dwarf atmospheres as well as on the opacity was considered.

This is only a part of the scientific activities on Belgrade Observatory during 1994. During this year, Serbian astronomers working on the project Physics and Motion of Celestial Bodies, published 109 bibliographical units. Out of them, 23 are published in the international journals such as *Astron. Astrophys.* (4), *Astron. Astrophys. Suppl. Series* (8), *Astrophys. Space Sci.* (2), *Solar Physics* (1), *Planet.Space Sci.* (2), *Physica Scripta* (2), *Astrophys. Lett. Commun.* (2), *J.Quant.Spectrosc. Radiative transfer* (1), *J. Phys. D* (1).

We hope that the closer collaboration with the Hungarian astronomers will enlarge additionally the "critical mass", and will exert its influence on the faster development of astronomy in both countries.