

SCIENTIFIC AND PROFESSIONAL ACTIVITY OF MILAN MIJATOV

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SUMMARY: The scientific and professional activities of our fellow astronomer M.Sc. Milan Mijatov (03.07.1933., Beograd - 19.11.1996., Beograd), former Director of Astronomical Observatory in Belgrade, is presented. His bibliography is also given.

Immediately after graduating in astronomy Milan Mijatov entered the Astronomical Observatory in Belgrade (January 1st, 1963) and joined the Absolute Declinations Division practically at the moment of its formation, as a second collaborator (the first and its founder was G. Teleki). From the very beginning he was faced with the pioneering setting up of the Vertical Circle, the basic tool of the Division. His first published papers (1-13) are dedicated to the preliminary examinations of instrumental organs: eyepiece micrometer, micrometric microscopes, levels, graduated circle, and flexure. Papers (18 & 19) are related to examinations of Meridian Circle and object-glasses of Meridian and Vertical Circles. Working in the Permanent Level Commission, Mijatov is one of the authors of a new method of level trier examination and the application of this method to the "Bamberg" trier. This method showed the deficiency of the trier. Four 1" levels with two level-bubble lengths and at three different temperatures were examined. Level errors and their temperature dependent characteristics were specially analyzed. Applying the new method of analyzing the periodic errors, 7 micrometers of the Vertical Circle were completely examined. From the mentioned pa-

pers it may be seen that Mijatov, as the result of cooperation of two Divisions, for Absolute Declinations and for Differential Coordinates, participated also in the examinations carried out at Meridian Circle.

The flexure, as one of the most important parameters of Vertical Circle, and generally speaking, of all astrometrical instruments used for declination determinations, is probably the problem which took the main place in Mijatov's scientific and professional activity. The papers (8, 10, 11, 13, 14, 15, 17, 24, 27, 28, 29, 34, 36, 37 and 39) are wholly related to this matter. During 1969 Mijatov took part in the flexure investigation of Pulkovo Vertical Circle in day-time conditions, to enhance the accuracy of Sun and planet observations. It was established that flexure could be determined during day-time with sufficient accuracy and that a large day-time flexure variation existed, which can considerably affect the accuracy of Sun and planet observations. The paper treating this problem (11) conquered third place at in internal competition at Pulkovo Observatory. Paper (13) is also related to the problems of the flexure of meridian instruments in day-time observations. It is stated that, if a good protection against insolation is provided, the flexure can be determined in day-time with the same accuracy as during night observations.

Mijatov's Master's thesis "Flexure of meridian instruments in day-time conditions", defended in 1972, and published as an abstract (17), represents a contribution to the research of this important subject for day-time observations, especially concerning vertical circles. Examinations were carried out at meridian and vertical circles, with a closed and with an open pavilion. It was ascertained that flexure can be determined with satisfactory accuracy and without significant systematic errors. The main systematic effects originate from the collimators displacement, indoor refraction and tube refraction.

Later, Mijatov reverted to the flexure several times, especially after the completion of the Catalogue of absolute declinations of 307 bright stars observed with the Belgrade Vertical Circle (24, 27, 28, 29, 34, 36 and 39). Of particular interest is the 1976-1985 period, due to the fact that during observations in this period a lot of material was gathered and two periods, 1976-80 and 1983-85 could be compared. The second period contains observations of 213 selected FK4 stars, made by Bozhichkovich. An interesting and important conclusion adduced in (39) that, besides using horizontally installed collimators for flexure determinations, observations of selected fundamental stars are also to be used for such determinations.

It is natural that refraction research was also Mijatov's preoccupation, because it was one of the basic topics of his Division. At the beginning of 1973, Mijatov started with investigations in the field of chromatic refraction (16), conceived to result in his Ph.D thesis, but due to his Director duties and, later, to his illness, were interrupted.

An important event in Division's activity, as well as in Mijatov's was the reconstruction of the Vertical Circle, performed in the 1972-74 period, because of a series of its constructional deficiencies revealed during the preliminary examinations. The reconstruction was accomplished by experts from Pulkovo

Observatory. The results, published in papers (20, 21, 22 and 23), show that the necessary stability of the instrument, for absolute observations, was achieved. Variations of instrumental constants were sufficiently small over longer time intervals. The reconstruction enabled observations to be carried out in the 1976-80 period, which resulted in the first Belgrade Catalogue of Absolute Declinations of 307 Bright Stars, zone $+65^\circ - +90^\circ$ (31). As a consequence of this considerable work, a series of papers (32, 33, 34 and 35) followed. Systematic differences with respect to the star positions in fundamental catalogues FK4 and FK5 are given, as well as the systematic differences of $\Delta\delta_\alpha$ and $\Delta\delta_\delta$ types. It was shown that the Catalogue system was closer to the FK5 system.

At the beginning of 1982, observations of major and minor planets with the Vertical Circle were started, in which Mijatov did not participate, but he authored several analyses of obtained results (36, 37, 38 and 40). It was shown that the applied method of (O-C) determination cannot entirely eliminate the systematic effects connected with the time factor, temperature, flexure and refraction. A method of determination of uneliminated effects on (O-C) in planet declination values is given.

In Mijatov's last paper (40), a review is presented of all outer planet observations with the Belgrade Vertical Circle, in the 1982-90 period.

At summing up it is not to lose sight of the circumstance that, owing to his grave illness, M. Mijatov's working engagement was on a part time basis for many years. Nevertheless, the fact remains that he left a distinct mark on the inception and development of fundamental astrometry at the Belgrade Observatory.

It is therefore with gratitude and appreciation that this Observatory will preserve the memory of its fellow M. Mijatov.

BIBLIOGRAPHY OF THE SCIENTIFIC AND PROFESSIONAL PAPERS

1. Teleki, G., Sadžakov, S., Mijatov, M. 1968: Une methode d'examen de l'examineur des niveaux. Publ. Obs. Astron. Beograd, No. 14, p. 41-72.
2. Mijatov, M., Sadžakov, S. 1968: L'examen de l'examineur des niveaux "Askania" No. 630348. Publ. Obs. Astron. Beograd, No. 14, p. 73-87.
3. Mijatov, M., Sadžakov, S. 1968: Resultats de l'examen de niveaux du grand cercle meridien. Publ. Obs. Astron. Beograd, No. 14, p. 110-114.
4. Mijatov, M., Sadžakov, S. 1968: L'examen du micrometre oculaire du grand cercle meridien. Publ. Obs. Astron. Beograd, No. 14, p. 115-128.
5. Teleki, G., Mijatov, M., Sadžakov, S. 1968: Les micrometres du grand cercle vertical. Publ. Obs. Astron. Beograd, No. 14, p. 180-207.
6. Sadžakov, S., Mijatov, M. 1968: Resultats de l'examen des niveaux du grand cercle vertical. Publ. Obs. Astron. Beograd, No. 14, p. 208-221.
7. Teleki, G., Sadžakov, S., Mijatov, M. 1969: New views at the examination of one-second levels. Publ. Obs. Astron. Beograd, No. 16, p. 22-26.
8. Mijatov, M. 1969: About the telescope flexure as the one of most important problems of vertical circles. Publ. Obs. Astron. Beograd, No. 16, p. 35-39.

9. Sadžakov, S., Mijatov, M. 1969: Examen du micrometre de la lunette zenithale du Laboratoire Geodetique de l'Academie Hongroise. *Acta Geodetica, Geophysica et Montanistica*, T. 3, No. 1-2.
10. Mijatov, M. 1971/72: Examination of the flexure of Belgrade meridian circle by the daytime. *Bull. Obs. Astron. Beograd*, Vol. 29, F.1, No. 125, p. 19-25.
11. Kosin, G.S., Mijatov, M. 1972: Investigation of the flexure of the Pulkovo vertical circle during daytime. *Publ. 18th Astrometrical Conf. 1969*, p. 198-201.
12. Teleki, G., Mijatov, M. 1972: On the influence of the position of the horizontal axis on the determination of zenith distances by means of a vertical circle. *Publ. 18th Astrometrical Conf. 1969*, p. 210-206.
13. Mijatov, M. 1973: Certain problems on flexure of meridian instruments. *V Kongres na matematikarite, fizikarite i astronomite na Jugoslavija, Ohrid 1970. Zbornik na trudovite, Tom I, Matematika*, p. 227-229.
14. Kosin, G.S., Mijatov, M. 1973: Investigation of flexure of the Pulkovo vertical circle during day-time in connection with observations of the Sun and planets. *Izv. Glav. Astron. Obs. Pulkovo*, No. 191, *Astrofiz. i Astrometr.*, p. 134-139.
15. Mijatov, M. 1975: On some systematic errors of flexure determination with horizontal collimators at day-time. *19th Astrometrical Conf. 1972*, p. 173-175.
16. Mijatov, M. 1975: Chromatic refraction and its influence on astrometrical measurements. *Publ. Obs. Astron. Beograd*, No. 20, p. 163-165.
17. Mijatov, M. 1975: Flexure of meridian instruments at day-time conditions. *Publ. Obs. Astron. Beograd*, No. 20, p. 195-198.
18. Mijatov, M. 1975: Examination of the pivots of the large meridian circle in Belgrade. *Publ. Obs. Astron. Beograd*, No. 20, p. 199-204.
19. Protić-Benišek, V., Mijatov, M. 1975: Preliminary testing results of objectives of Belgrade Observatory large meridian circle and large vertical circle. *Publ. Obs. Astron. Beograd*, No. 20, p. 213-217.
20. Teleki, G., Mijatov, M. 1976: Observational results of the Belgrade vertical circle after its reconstruction. *Publ. Dep. Astron. Univ. Beograd, Fac. Sci.*, No. 6, p. 123-124.
21. Usanov, D.S., Teleki, G., Mijatov, M. 1978: Reconstruction of the vertical circle of the Belgrade Observatory. *New ideas in astrometry, Conf. in Pulkovo, 1975*, p. 158-162.
22. Teleki, G., Mijatov, M., Bozhichkovich, D. 1979: Present characteristics of the Belgrade vertical circle. *Publ. Obs. Astron. Beograd*, No. 26, p. 181-184.
23. Mijatov, M., Bozhichkovich, D., Teleki, G. 1981: Preliminary results of a determination of the declinations of 308 bright stars in the zone from $+65^\circ$ to $+90^\circ$ obtained with the vertical circle of the Belgrade Observatory. *Problems of modern astrometry in constructing an inertial coordinate system*, p. 154-156.
24. Mijatov, M., Bozhichkovich, D. 1982: Preliminary results of the flexure investigation of the Belgrade large vertical circle in the period 1976-1979. *Bull. Obs. Astron. Beograd*, No. 132, p. 3-5.
25. Mijatov, M., Trajkovska, V. 1984: Analysis of some characteristics of the levels of vertical circle. *Bull. Obs. Astron. Beograd*, No. 134, p. 9-15.
26. Bozhichkovich, D., Mijatov, M. 1984: Investigation of the divided circle of the Belgrade large vertical circle. *Bull. Obs. Astron. Beograd*, No. 134, p. 16-25.
27. Stančić, Z., Mijatov, M. 1985: Nova odredjivanja kolimacije i savijanja na VMK AO u Beogradu. *Proc. VIII Gen. Assembly, Union of Societies of Math., Phys. and Astron. of Yugoslavia, Pristina, 1985*, p. 352.
28. Stančić, Z., Mijatov, M. 1987: Variations of collimation and flexure of the Belgrade large meridian circle under day-time conditions. *Bull. Obs. Astron. Beograd*, No. 137, p. 85-90.
29. Mijatov, M., Trajkovska, V. 1989: Flexure of the Belgrade large vertical circle in the period 1976-1980. *Bull. Obs. Astron. Beograd*, No. 140, p. 37-42.
30. Mijatov, M., Trajkovska, V. 1989: Activity of the Absolute Declination Group. *Publ. Obs. Astron. Beograd*, No. 36, p. 71-82.
31. Mijatov, M., Teleki, G., Bozhichkovich, D., Trajkovska, V. 1991: Catalogue of declinations of 301 bright stars in the zone $+65^\circ - +90^\circ$ (BCAD). *Bull. Obs. Astron. Beograd*, No. 143, p. 1-20.
32. Mijatov, M., Teleki, G., Bozhichkovich, D., Trajkovska, V. 1991: Belgrade Absolute Declination Catalogue. *1st Gen. Conf. of the Balkan Phys. Union, Sept. 1991, Thessaloniki, Greece*.
33. Mijatov, M., Trajkovska, V., Bozhichkovich, D., Sekulovic, V. 1991: Systematic errors of $\Delta\delta_\alpha$ and $\Delta\delta_\delta$ type of the Belgrade Absolute Declination Catalogue. *1st Gen. Conf. of the Balkan Phys. Union, Sept. 1991, Thessaloniki, Greece*.
34. Mijatov, M., Pakvor, I., Trajkovska, V., Sekulovic, V. 1992: Systematic errors of some parameters which have been used in the treatment of Belgrade catalogue of absolute declinations (BCAD). *Bull. Astron. Beograd*, No. 145, p. 125-130.
35. Mijatov, M., Trajkovska, V., Bozhichkovich, D., Sekulović, V. 1992: Systematic errors of $\Delta\delta_\alpha$ and $\Delta\delta_\delta$ type of the Belgrade Absolute Declination Catalogue. *Bull. Astron. Beograd*, No. 146, p. 47-52.
36. Trajkovska, V., Mijatov, M. 1993: Influence of unaccounted effects of flexure and refraction on the values O-C for outer planets determined with the Belgrade vertical circle. *Publ. Obs. Astron. Beograd*, No. 44, p. 27-28.

37. Trajkovska, V., Mijatov, M. 1993: Analysis of the systematic errors affecting (O-C) determination of the outer planets observed with the Belgrade vertical circle. Bull. Astron. Beograd, No. 148, p. 11-16.
38. Trajkovska, V., Mijatov, M. 1995: A method of determination of unaccounted effects affecting the declination (O-C) values for the planets. 2nd Astron. Conf. Hellenic Astron. Soc., June 1995, Thessaloniki, Greece.
39. Mijatov, M., Pakvor, I., Sekulović, V. 1996: The flexure of the Belgrade vertical circle in the period 1976-1985. Bull. Astron. Beograd, No. 153, p. 85-88.
40. Trajkovska, V., Mijatov, M. 1996: Meridian observations of the outer planets with the Belgrade vertical circle. Publ. Obs. Astron. Beograd, No. 54, p.195-197.

НАУЧНА И СТРУЧНА ДЕЛАТНОСТ Мр МИЛАНА МИЈАТОВА

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