

## LIFE AND SCIENTIFIC ACTIVITY OF SOFIJA SADŽAKOV (1929-2009)

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(Received: March 16, 2011; Accepted: March 16, 2011)

**SUMMARY:** A short biography followed by the list of publications of Sofija Sadžakov (1929-2009), a distinguished Serbian astronomer whose main field was fundamental astrometry, is presented.

**Key words.** Obituaries, biographies

### 1. A SHORT BIOGRAPHY OF SOFIJA SADŽAKOV

Sofija Sadžakov passed away on March 13, 2009.

She was born on June 30, 1929 in Sivac (West Bačka District, Autonomous Province of Vojvodina, Serbia) in the same settlement where her life ended. Her education also started in Sivac, to be continued in the nearby town of Sombor where Sofija Sadžakov attended the local Gymnasium. After having finished it, in 1950, she began her studies of mathematics and astronomy at the Faculty of Sciences of Belgrade University where she took degree in 1955.

In the period between 1955 and 1962 Sofija Sadžakov worked as a teacher in some secondary schools in Serbia and Bosnia and Herzegovina.

At the institution where she spent most of her career, Astronomical Observatory in Belgrade, Sofija Sadžakov obtained a permanent position in 1962. This was the time when fundamental astrometry was started at the Belgrade Observatory. The Belgrade Observatory was then unique because only it, in the whole world, possessed three identical instruments (all of them used in fundamental astrometry): Large Transit Instrument, Large Vertical Circle, Large Meridian Circle. The last of the three was the instrument of Sofija Sadžakov; she worked with it most of her time spent at the Observatory and

achieved her best scientific results; only in the beginning, during a rather short time, Sofija Sadžakov was a member of another group (around Large Vertical Circle). The staff was organised in groups centred on instruments. The group using the Large Meridian Circle (LMC) was known as the Group of Relative Coordinates; Sofija Sadžakov was the head of this group for many years. She was an indefatigable observer. Therefore, it is not surprising that the activity of Sofija Sadžakov and her co-workers resulted in seven stellar catalogues. These catalogues gave an important contribution to astronomical science all over the world. Also with LMC day-light observations aimed at improving the reference-frame orientation were undertaken. These observations started in 1974, they included the Sun, Mercury, Venus and Mars (from 1981).

Sofija Sadžakov obtained the Msc degree at the Belgrade University in 1968. Her PhD she prepared at the famous Pulkovo Observatory under the supervision of well known specialists M. S. Zverev and A. A. Nemiro. The degree she obtained in Belgrade in 1977. In 1995, Sofija Sadžakov retired from the Belgrade Observatory as principal research fellow.

Sofija Sadžakov spent some time doing research at well known scientific institutions in Uccle (Belgium), Bordeaux (France), Moscow and Saint Petersburg (Russia).

Sofija Sadžakov did not forget teaching in primary and secondary schools (in the beginning of her career she was a teacher). She was one of the most active persons whose merit is that in 1968 astronomy as a separate subject was included in the teaching process in gymnasiums on the territory of Serbia (then federal unit of Yugoslavia). This, however, required a corresponding literature, the first textbook was a translation from Russian, the second one was a product of Serbian specialists. In both cases Sofija Sadžakov gave her contribution. One should not forget auxiliary literature, like atlases, sky maps, handbooks, etc. Sofija Sadžakov was active again, she was a co-author of a sky atlas and a handbook foreseen to be used by young contestants in activities in astronomy.

Sofija Sadžakov was a member of several scientific societies. The most important to say is that she was a member of the Organising Committee of IAU Commission 8 and President of the Society of Astronomers of Serbia between 1983 and 1985.

For her work Sofija Sadžakov was awarded. In 1977 her activity at the Pulkovo Observatory brought her a tribute from there, in 1990 she received the October Prize of the City of Belgrade (together with Miodrag Dačić) for the work on star catalogues and, in 2000, she received the Annual Prize of the Belgrade Observatory for her contribution to the development of that institution.

## 2. NOTES ON SOFIJA SADŽAKOV'S BIBLIOGRAPHY

A list of publications where Sofija Sadžakov appears as one of the authors is given below. As can be seen, this list contains a total of 138 publications. The list is formed without distinguishing types of publications. It mostly includes articles in scientific journals; it can be seen that among these journals are very prestigious ones such as "The Astronomical Journal", "Astronomy and Astrophysics Supplement Series", etc. However, in the list one also finds articles published in scientific meeting proceedings, technical papers, articles in popular journals and major publications like star catalogues (such cases are recognisable because the list then gives the volume number only), and books (textbook or handbook). Also, if there is any difference in data between the contents of a proceedings or a journal and the text itself, then in the list we accept what was written on the first page of the text. An example is the reference "Radovi na meridijanskom krugu Astronomske opservatorije u Beogradu" from 1989, where in the Table of Contents one finds the name of M. Dačić mentioned as a coauthor, but inside the book one finds the name Sadžakov only. For this reason in the list below (No 87) S. Sadžakov appears as the sole author. In the cases of papers written in Russian the names of the Serbian authors are given in Latin transcription for that language, for instance, Sadzhakov(a), Dachich, etc.

## 3. SOFIJA SADŽAKOV'S BIBLIOGRAPHY

### 1960/61

1. Sadžakov, S.: Metode rada u vanškolskom radu sa učenicima, Bilten Zavoda za stručno školstvo AP Vojvodine.

### 1961

2. Sadžakov, S.: Potpuno pomračenje Sunca od 15. II 1961. godine, *Vasiona*, **9**, pp. 28-29.

### 1967

3. Sadžakov, S., Šaletić, D.: Mesec, Zbornik "Nastava astronomije u školama srednjeg obrazovanja", Zavod za izdavanje udžbenika, Beograd.

4. Sadžakov, S.: Razvitak sadašnjeg kalendarskog računanja, Zbornik "Nastava astronomije u školama srednjeg obrazovanja", Zavod za izdavanje udžbenika, Beograd.

### 1968

5. Teleki, Dj., Sadžakov, S., Mijatov, M.: Jedna metoda za ispitivanje ispitivača za libele, *Publikacije Astron. ops. Beograd*, **14**, pp. 41-72.

6. Mijatov, M., Sadžakov, S.: Ispitivanje ispitivača libela "Askania" No 630.348, *Publikacije Astron. ops. Beograd*, **14**, pp. 73-87.

7. Mijatov, M., Sadžakov, S.: Rezultati ispitivanja libele velikog meridijanskog kruga, *Publikacije Astron. ops. Beograd*, **14**, pp. 110-114.

8. Mijatov, M., Sadžakov, S.: Ispitivanje okularnog mikrometra Velikog meridijanskog kruga, *Publikacije Astron. ops. Beograd*, **14**, pp. 115-128.

9. Sadžakov, S., Šaletić, D.: Odredjivanje popravaka na limbu Velikog meridijanskog kruga Brunsovom metodom na svako pola stepena, *Publikacije Astron. ops. Beograd*, **14**, pp. 159-167.
10. Teleki, Dj., Mijatov, M., Sadžakov, S.: Mikrometri velikog vertikalnog kruga, *Publikacije Astron. ops. Beograd*, **14**, pp. 180-207.
11. Sadžakov, S., Mijatov, M.: Rezultati ispitivanja libela velikog vertikalnog kruga, *Publikacije Astron. ops. Beograd*, **14**, pp. 208-221.
12. Sadžakov, S., Mijatov, M.: Examen du micromètre de la lunette zénithale du Laboratoire Géodésique de l'Académie Hongroise, *Acta Geod. Geoph. et Montanist. Acad. Sci. Hung.*, **3**, (1/2), pp. 161-171.
13. Sadžakov, S.: Ponašanje sekundnih libela u polju horizontalnih gradijenata temperature, Msc Thesis, Belgrade University.

#### **1969**

14. Teleki, Dj., Sadžakov, S., Mijatov, M.: Novi pogledi na ispitivanje sekundnih libela, *Publikacije Astron. ops. Beograd*, **16**, pp. 22-26.
15. Sadžakov, S.: Značaj astronomije u vaspitno-obrazovnom procesu učenika srednjih škola - gimnazija, *Publikacije Astron. ops. Beograd*, **16**, pp. 59-64.

#### **1970**

16. Šaletić, D., Sadžakov, S.: Corrections a courte période du cercle méridien et les méthodes de leur détermination, *Bulletin de l'Observatoire astronomique de Belgrade*, **124**, pp. 117-135.
17. Sadžakov, S.: Geocentrični i heliocentrični sistem sveta, *Vasiona*, **18**, pp. 38-40.

#### **1971**

18. Ševarlić, B., Sadžakov, S.: Astronomski album? Zavod za izdavanje udžbenika i nastavna sredstva SR Srbije, Beograd.

#### **1972**

19. Sadžakov, S., Šaletić, D.: Catalogue of declinations of the latitude Programme stars (KŠZ), *Publikacije Astron. ops. Beograd*, **17**.
20. Sadžakov, S.: Lenjingradski planetarijum, *Vasiona*, **20**, pp. 56-59.
21. Ševarlić, B., Sadžakov, S.: Astronomski atlas za učenike osnovnih i srednjih škola, Zavod za udžbenike i nastavna sredstva Srbije, Beograd.

#### **1973**

22. Sadžakov, S., Šaletić, D.: Jedna diferencijalna metoda za odredjivanje grešaka limba, *Zbornik na trudovite*, tom I, Matematika, Skopje, pp. 213-222.
23. Sadžakov, S., Šaletić, D.: Neki rezultati rada na katalogu širinskih zvezda, *Zbornik na trudovite*, tom I, Matematika, Skopje, pp. 223-225.
24. Ševarlić, B., Sadžakov, S.: Kako unaprediti nastavu astronomije u srednjim i visokim školama Jugoslavije, *Zbornik na trudovite*, tom I, Matematika, Skopje, pp. 253-262.
25. Sadžakov, S.: Nastava astronomije u gimnazijama prirodno-matematičkog smera i njeni jedno-godišnji rezultati, *Zbornik na trudovite*, tom I, Matematika, Skopje, pp. 263-266.

#### **1974, 1975, 1977**

26. Ševarlić, B., Karabin, M., Sadžakov, S.: Astronomija za srednje škole, Zavod za izdavanje udžbenika, Beograd (three editions).

#### **1974**

27. Kosin, G. S., Sadzhakova, S.: Uluchshenie sobstvennykh dvizhenij zvezd Mezhdunarodnoj sluzhby shiroty, *Izvestiya GAO AN SSSR v Pulkove*, **192**, pp. 9-14.

### 1975

28. Mijatov, M., Sadžakov, S., Dačić, M., Šaletić, D., Protić-Benišek, V.: Ispitivanje naglavaka velikog meridijanskog kruga u Beogradu, *Publikacije Astron. ops. Beograd*, **20**, pp. 199-204.
29. Sadžakov, S., Šaletić, D., Dačić, M.: Program posmatranja na velikom meridijanskom krugu Astronomске opservatorije u Beogradu, *Publikacije Astron. ops. Beograd*, **20**, pp. 218-222.
30. Sadžakov, S., Šaletić, D.: Declinations and the proper motions of the stars of the International Latitude Service on the basis of meridian catalogues from 1929-1972, *Publikacije Astron. ops. Beograd*, **21**.
31. Sadžakov, S., Dačić, M., Šaletić, D., Protić-Benišek, V.: On the systematic differences between the Belgrade Catalogue of Latitude Stars and AGK3R, *Bulletin de l'Observatoire astronomique de Belgrade*, **126**, pp. 3-7.
32. Sadžakov, S., Šaletić, D.: Investigation of declinations and of proper motions of the Belgrade General catalogue of Latitude Stars BSKŠZ1 and BSKŠZ2, *Bulletin de l'Observatoire astronomique de Belgrade*, **126**, pp. 7-11.

### 1976

33. Sadzhakova, S. N., Fomin, V. A.: Predvaritel'nye rezul'taty sravneniya kataloga AGK3 so Svodnym katalogom shirotnykh zvezd (SKSHZ) i dannymi shirotnykh nablyudenij, *Astron. tsirk.* **930**, pp. 3-4.
34. Sadžakov, S., Šaletić, D., Dačić, M.: Some results of the current work on the Catalogue of PZT programme stars, *Publications of the Department of Astronomy of Beograd*, **6**, pp. 117-118.
35. Sadžakov, S., Dačić, M., Šaletić, D.: Observations of the Sun, Mercury and Venus in both coordinates made with the large meridian circle of Belgrade Observatory, *Publications of the Department of Astronomy of Beograd*, **6**, pp. 119-121.

### 1977

36. Sadžakov, S. N., Fomin, V. A.: Preliminary results of the comparison of the AGK3 Catalogue with the General Catalogue of Latitude Stars and observational data from zenith-telescopes and photographic zenith tubes, *Bulletin de l'Observatoire astronomique de Belgrade*, **128**, pp. 16-18.
37. Sadžakov, S.: Ispitivanje sistematskih grešaka posmatranja raznih opservatorija na osnovu njihovog uporedjivanja sa Beogradskim izvedenim katalogom širinskih zvezda i fotografskim katalogom AGK3, PhD Thesis, Belgrade University.

### 1978

38. Sadzhakova, S., Shaletich, D., Dachich, M.: Nekotorye rezul'taty nablyudenij zvezd programm fotograficheskikh zenitnykh trub v Belgrade, Trudy XX astr. konferentsii "Novye idei v astrometrii", ed. M. S. Zverev, Leningrad-Moskva, pp. 71-72.
39. Sadžakov, S.: Sravnenie sklonenij zvezd kataloga AGK3 s rezul'tatami shirotnykh nablyudenij poluchennykh na zenit-teleskopakh i fotograficheskikh zenitnykh trubakh, *Izvestiya GAO AN SSSR v Pulkove*, **199**, pp. 36-41.
40. Sadžakov, S., Šaletić, D.: Sistematische oshibki zvezd shirotnykh program, Proceedings of IAU Symposium No 78 held in Kiev.
41. Sadžakov, S., Šaletić, D.: Svodnyj katalog shirotnykh zvezd i ego kharakteristiki, Proceedings of IAU Symposium No 78 held in Kiev.
42. Sadžakov, S.: Izvedeni katalog širinskih zvezda (IKŠZ), *Publikacije Astron. ops. Beograd*, **24**.

### 1979

43. Sadžakov, S., Šaletić, D., Dačić, M.: First accuracy estimates of the stellar positions in the "Preliminary catalogue of the NPZT program stars" compiled on the basis of observations with the Belgrade Meridian Circle, *Modern astrometry*, IAU Coll. No 48, eds. F. V. Prochazka, R. H. Tucker, pp. 463-470.
44. Sadžakov, S., Šaletić, D., Dačić, M.: Preliminary results of the observation of the NPZT stars with the Belgrade large meridian circle, *Publikacije Astron. ops. Beograd*, **26** pp. 191-192.
45. Sadžakov, S. N.: Ispitivanje sistematskih grešaka tipa  $\Delta\delta_\alpha$  širinskih posmatranja raznih opservatorija na osnovu njihovog uporedjivanja sa Beogradskim izvedenim katalogom širinskih zvezda i fotografskim katalogom AGK3, *Publikacije Astron. ops. Beograd*, **27**.

### 1980

46. Kosin, G. S., Sadzhakova, S., Fomin, V. A.: Otsenka sobstvennykh dvizhenij svodnogo kataloga shirotnykh zvezd i fotograficheskogo kataloga AGK3, *Izvestiya GAO AN SSSR v Pulkove*, **197**, pp. 12-16.

### 1981

47. Sadžakov, S. N.: Organizacija usmerenog obrazovanja u nas i mesto astronomije u njoj, *Publikacije Astron. ops. Sarajevo*, **1**, pp. 51-56.

48. Sadžakov, S., Dačić, M., Šaletić, D.: Results of observation of the Sun, Mercury and Venus from 1974 to 1979, *Publikacije Astron. ops. Sarajevo*, **1**, pp. 69-78.

49. Sadžakov, S., Šaletić, D., Dačić, M., Trajkovska, V.: Characteristics of the preliminary results obtained in elaborating the Catalogue of NPZT Stars, *Publikacije Astron. ops. Sarajevo*, **1**, pp. 167-172.

50. Sadžakov, S. N., Šaletić, D. P., Dačić, M. D.: Katalog zvezda programa SFZT, *Publikacije Astron. ops. Beograd*, **30**.

51. Sadzhakova, S., Shaletich, D., Dachich, M.: Issledovanie sistematischeskikh oshibok vida  $\Delta\delta_\alpha$  predvaritel'nogo Belgradskogo kataloga zvezd programm FZT severnogo polushariya, *Zadachi sovremennoj astrometrii v sozdaniï inertsijal'noj sistemy koordinat*, Trudy XXI Astrometricheskoy konferentsii SSSR, ed. V. P. Shcheglov, pp. 157-160.

52. Sadzhakova, S. N., Fomin, V. A.: O Belgradskom kataloge zvezd programm severnykh fotograficheskikh zenitnykh trub (NPZT), *Astron. tsirk.* **1194**, pp. 7-8.

### 1982

53. Sadžakov, S., Dačić, M., Šaletić, D., Ševarlić, B.: Results of comparison of the Belgrade and the Bordeaux Catalogs of the northern PZT stars, *Bulletin de l'Observatoire astronomique de Belgrade*, **132**, pp. 7-12.

54. Sadžakov, S., Dačić, M., Šaletić, D., Ševarlić, B.: Observations of the Sun and inner planets with the large meridian circle in Belgrade, Sun and planetary system, Proc. Sixth ERMA, Eds. W. Fricke, G. Teleki, *Astrophysics and space science library*, **96**, pp. 445-446.

55. Sadžakov, S., Dačić, M., Šaletić, D.: Results of observations of the Sun, Mercury and Venus with the Belgrade large meridian instrument, *Bulletin de l'Observatoire astronomique de Belgrade*, **132**, pp. 45-52.

56. Sadzhakova, S., Fomin, V. A.: Sravnenie sklonenij zvezd kataloga AGK3 s rezul'tatami shirotnykh nablyudenij na zenit-teleskopakh i fotograficheskikh zenitnykh trubakh, *Izv. GAO AN SSSR v Pulkove, astrometriya i astrofizika*, **199**, pp. 36-40.

57. Sadžakov, S., Šaletić, D., Dačić, M.: Properties of the North PZT Star Catalogue, *Hvar Observatory Bulletin Supplement*, **6**, pp. 99-99.

58. Sadžakov, S., Dačić, M., Šaletić, D.: Programme of observations of the Catalogue of Double and Pulkovo Stars with the Belgrade large meridian circle, *Hvar Observatory Bulletin Supplement*, **6**, pp. 101-105.

59. Sadžakov, S., Dačić, M., Šaletić, D.: Observations du Soleil, du Mercure, de Vénus et des étoiles dès l'an 1975 à 1981, Belgrade, *Bulletins for Applied Mathematics*, **104**, pp. 55-62.

### 1983

60. Sadžakov, S., Dačić, M., Šaletić, D.: Observations of the Sun, Mercury and Venus with the Belgrade meridian circle in the period 1979 to 1981, *Bulletin de l'Observatoire astronomique de Belgrade*, **133**, pp. 45-50.

61. Sadzhakova, S., Dachich, M., Shaletich, D.: O kataloge polozhenij zvezd programm SFZT, *Astrometriya i astrofizika*, **48**, pp. 58-59.

62. Sadžakov, S., Dačić, M., Fomin, V. A.: Investigation of the systematic errors of the Belgrade NPZT and AGK3 catalogues, *Astron. Astrophys. Suppl. Ser.*, **52**, pp. 455-462.

63. Sadžakov, S., Dačić, M.: Variation in time of the parameters ( $u + m$ ) and  $M_o$  of the Belgrade meridian circle, *Bull. Appl. Math.*, **190**, pp. 13-17.

64. Sadžakov, S., Dačić, M.: Systematic errors of Belgrade NPZT programme star catalogue, *Bull. Appl. Math.*, **197**, pp. 121-125.

**1985**

65. Sadžakov, S., Dačić, M.: Observations of the Sun and planets with the Belgrade large meridian circle, *Bulletin de l'Observatoire astronomique de Belgrade*, **135**, pp. 47-53.

**1986**

66. Sadžakov, S., Dačić, M., Fomin, V. A.: Comparison of Tokyo PZT Catalogues with AGK3 and with three other independent catalogues, IAU Symp. 109 "Astrometric Techniques", eds. H. K. Eichhorn, R. J. Leacock, D. Reidel Publishing Company, pp. 571-580.

67. Sadžakov, S., Dačić, M., Fomin, V. A.: Comparison of the Potsdam PZT catalogue with four NPZT catalogues, *Astron. Astrophys. Suppl. Ser.*, **65**, pp. 379-381.

68. Sadžakov, S., Dačić, M., Fomin, V. A.: Investigation of systematic  $\Delta\alpha_\alpha$  and  $\Delta\delta_\alpha$  type errors of Bucharest NPZT catalogue, Cent. Inst. Phys. Bucharest Astron. Obs., Cent. Astron. Space Sci., pp. 73-78.

**1987**

69. Sadžakov, S.: Dr Djordje Teleki, *Vasiona*, **35**, pp. 33-35.

70. Tolchel'nikova-Murri, S. A., Sadžakov, S.: Pulkovska opservatorija i Beogradска opservatorija, *Vasiona*, **35**, pp. 100-106.

71. Sadzhakova, S. N., Dachich, M. D.: Predvaritel'nye rezul'taty meridianniykh nablyudenij po programmam "dvojnye zvezdy" i "opornye zvezdy v okrestnostyakh radioistochnikov", Sovremennaya astrometriya: Doklady po mater. 23-j astrometr. konf., Leningrad, pp. 64-65.

72. Sadzhakova, S., Dachich, M.: Nablyudenija Solntsa i bol'sikh planet na meridiannom kruge v Belgrade, Sovremennaya astrometriya: Doklady po mater. 23-j astrometr. konf., Leningrad, pp. 325-328.

73. Sadžakov, S. N.: Systematic errors in visual and photographic latitude star catalogues, *Astron. Nachr.*, **308**, pp. 363-374.

74. Sadzhakova, S., Dachich, M., Fomin, V. A.: Issledovanie sistematiceskikh oshibok Belgradskogo kataloga v zone sklonenij ot  $35^\circ$  do  $40^\circ$ , *Izv. Glav. Astron. obs. Pulkovo*, **204**, pp. 41-47.

75. Sadžakov, S.: Investigation of systematic errors in the General Catalogue of Latitude Stars (IKŠZ) in Belgrade, Figure and dynamics of the earth, moon and planets, Proceedings of a symposium, ed. P. Holota, pp. 883-888.

**1988**

76. Sadžakov, S.: Characteristics of the General Latitude Star Catalogue, *Bulletin de l'Académie Serbe des Sciences et des Arts, Classe de Sciences mathématiques et naturelles, Sciences mathématiques*, **30**, pp. 11-21.

77. Sadžakov, S., Dačić, M., Stanić, Z.: Analysis of results obtained from observations with meridian circles in Belgrade and Brorfelde, *Bulletin de l'Observatoire astronomique de Belgrade*, **138**, pp. 9-12.

78. Sadžakov, S., Dačić, M., Stanić, Z.: Results of diurnal measurements for the Sun, Mercury, Venus and Mars obtained in the period 1984-1986, *Bulletin de l'Observatoire astronomique de Belgrade*, **138**, pp. 78-84.

79. Sadžakov, S., Dačić, M.: Preliminary results of observations of double stars and the stars near radio sources with the Belgrade meridian circle, *Bulletin de l'Académie Serbe des Sciences et des Arts, Classe de Sciences mathématiques et naturelles, Sciences mathématiques*, **47**, pp. 17-21.

80. Sadžakov, S., Šaletić, D.: Systematic differences in position and proper motion between ILS catalogues and the main astrometric catalogues, *Astron. Astrophys. Suppl. Ser.*, **74**, pp. 53-61.

81. Sadžakov, S., Dačić, M., Stanić, Z.: Accuracy of the corrections determined for FK4 stars, *Bulletin de l'Observatoire astronomique de Belgrade*, **139**, pp. 7-13.

82. Sadžakov, S.: Application of Brosche's method to examinations of coordinate differences for stars of two catalogues, *Bulletin de l'Observatoire astronomique de Belgrade*, **139**, pp. 14-20.

83. Sadžakov, S. N., Ninković, S. D.: Astronomija i astrofizika (priručnik i testovi za učenike osnovnih i srednjih škola), Savez organizacija za naučnotehničko vaspitanje i obrazovanje mladih Srbije, Beograd.

### 1989

84. Sadžakov, S., Dačić, M.: A catalogue of right ascensions and declinations of FK4 stars, *Astron. Astrophys. Suppl. Ser.*, **77**, pp. 411-423.
85. Sadžakov, S.: Behaviour of second levels in the field of horizontal temperature gradients, *Bulletin de l'Observatoire astronomique de Belgrade*, **140**, pp. 31-36.
86. Dačić, M., Sadžakov, S., Cvetković, Z.: Observations of the Sun and planets with the Belgrade large meridian circle, *Bulletin de l'Observatoire astronomique de Belgrade*, **140**, pp. 49-52.
87. Sadžakov, S.: Radovi na meridijanskem krugu Astronomske opservatorije u Beogradu, *Publikacije Astron. ops. Beograd*, **36**, pp. 63-70.
88. Sadžakov, S., Dačić, M., Cvetković, Z., Ćatović, Z.: Characteristics of the Belgrade Double Star Catalogue, *Bulletin de l'Observatoire astronomique de Belgrade*, **141**, pp. 1-5.
89. Sadzhakova, S. N., Tolchel'nikova-Murri, S. A.: K probleme vybora metodiki nablyudenij i mezdunarodnogo sotrudnichestva v oblasti fundamental'noj astrometrii, Problemy postroeniya koordinatnykh sistem v astronomii, Leningrad, pp. 79-87.

### 1990

90. Sadžakov, S. N., Dačić, M. D.: Beogradski katalog dvojnih zvezda, *Publikacije Astron. ops. Beograd*, **38**.
91. Izmailov, S. P., Litkevich, N. G., Sadžakov, S. N., Simonenko, V. D., Suchkova, T. I., Tolchel'nikova-Murri, S. A., Turenko, V. I.: A comparison of the accuracy of the determination of right ascension by means of transit instruments of different types, Proc. IAU Symposium No 141: Inertial coordinate systems on the sky, eds. J. H. Lieske, V. K. Abalakin, Kluwer Academic Publ., Dordrecht (Netherlands), pp. 456-456.
92. Sadžakov, S., Cvetković, Z., Dačić, M.: A presentation of the work performed with the Belgrade Large Meridian Circle during the period 1968-1988, Proc. IAU Symposium No 141: Inertial coordinate systems on the sky, eds. J. H. Lieske, V. K. Abalakin, Kluwer Academic Publ., Dordrecht (Netherlands), pp. 489-490.
93. Sadžakov, S.: Behaviour of levels in the conditions of asymmetrical heating, *Bulletin de l'Observatoire astronomique de Belgrade*, **142**, pp. 79-81.

### 1991

94. Sadžakov, S., Dačić, M., Stančić, Z.: Characteristics of the catalogue containing stars situated in the vicinity of radio sources, Proc. IAU Coll. 100, eds. H. K. Eichhorn, C. A. Murray, A. R. Upgren, *Astrophys. Space Sci.*, **177**, pp. 87-91.
95. Tolchel'nikova-Murri, S. A., Sadžakov, S., Dačić, M., Stančić, Z.: The present situation with the absolute methods of observations in fundamental astrometry, Proc. IAU Coll. 100, eds. H. K. Eichhorn, C. A. Murray, A. R. Upgren, *Astrophys. Space Sci.*, **177**, pp. 495-498.
96. Sadžakov, S., Dačić, M., Cvetković, Z.: A catalog of positions of 290 stars situated in the vicinity of radio sources, *Astron. J.*, **101**, pp. 713-733.
97. Sadžakov, S., Dačić, M., Cvetković, Z.: Observations of the Sun and inner planets with the large meridian circle in Belgrade, *Bulletin de l'Observatoire astronomique de Belgrade*, **143**, pp. 21-27.
98. Sadžakov, S., Cvetković, Z., Dačić, M.: Observational work performed with the Belgrade large meridian circle during the period 1968-1988, *Bulletin de l'Observatoire astronomique de Belgrade*, **143**, pp. 53-58.
99. Sadžakov, S., Grujić, R.: Multidisciplinary studies of the variations in the mean geographic latitudes of Belgrade, *Bulletin de l'Observatoire astronomique de Belgrade*, **143**, pp. 77-79.
100. Tel'nyuk-Adamchuk, V. V., Kumkova, I. I., Sadžakov, S., Toma, E., Volianska, M. Yu.: Intermediate star reference systems in the vicinity of radio sources, Proc. IAU Coll. No 127: Reference systems, eds. J. A. Hughes, C. A. Smith, G. H. Kaplan, US Naval Observatory, Washington, DC (USA), pp. 363-367.
101. Izmailov, R. S., Litkevich, N. G., Sadžakova, S. N., Simonenko, V. D., Suchkova, T. I., Tolchel'nikova-Murri, S. A., Turenko, V. I.: The comparison of the accuracy of the determination of right ascension by means of transit instruments of different types, *Bulletin de l'Observatoire astronomique de Belgrade*, **144**, pp. 61-63.
102. Sadžakov, S.: Poštovani profesore Andjeliću, Spomenica posvećena Prof. Dr Tatomi P. Andješiću redovnom članu Srpske akademije nauka i umetnosti, ed. S. Sadžakov, Srpska akademija nauka i umetnosti Odeljenje prirodno-matematičkih nauka i Astronomska opservatorijska, Beograd, pp. 65-66.

**1992**

103. Sadžakov, S., Dačić, M., Cvetković, Z.: Observations of solar-system bodies with the Belgrade Meridian Circle, *Astron. Astrophys. Suppl. Ser.*, **92**, pp. 605-607.
104. Sadžakov, S., Dačić, M., Cvetković, Z.: Characteristics of the Belgrade star catalogue programme of PZT Ondrejev (BCPZT), *Bulletin astronomique de Belgrade*, **145**, pp. 107-114.
105. Dačić, M., Sadžakov, S., Cvetković, Z.: Results of observations of the Sun, Mercury, Venus and Mars from Belgrade, *Bulletin astronomique de Belgrade*, **145**, pp. 115-123.
106. Grujić, R., Sadžakov, S., Petrović, M.: The results of the research concerning the origin of variations in the mean geographic latitude of Belgrade, *Bulletin astronomique de Belgrade*, **145**, pp. 131-136.
107. Sadžakov, S., Dačić, M., Cvetković, Z.: Catalogue of positions of 223 Ondrejov PZT Stars observed at Belgrade Observatory, *Bulletin de l'Observatoire astronomique de Belgrade*, **146**, pp. 1-13.
108. Sadžakov, S., Dačić, M., Cvetković, Z.: Systematic effects in the Belgrade Catalogue of Double Stars, *Bulletin astronomique de Belgrade*, **146**, pp. 15-20.
109. Dačić, M., Sadžakov, S., Cvetković, Z.: Results of observations of the Sun and inner planets made at the Belgrade Observatory, *Bulletin astronomique de Belgrade*, **146**, pp. 65-67.
110. Sadžakov, S., Dačić, M.: Zverev Mitrofan Stepanovich (in memoriam), *Bulletin astronomique de Belgrade*, **146**, pp. 136-136.

**1993**

111. Sadžakov, S., Dačić, M., Cvetković, Z.: Characteristics of the catalogue of positions for 223 PZT-Ondrejov-programme stars, *Astron. Astrophys. Suppl. Ser.*, **97**, pp. 417-420.
112. Sadžakov, S., Cvetković, Z., Dačić, M.: Systematic errors in observational double star catalogues, *Bulletin astronomique de Belgrade*, **147**, pp. 1-10.
113. Dačić, M., Sadžakov, S., Cvetković, Z.: Results of observations of the Sun and inner planets made at the Belgrade Observatory - addendum to article 146, 65-67, *Bulletin astronomique de Belgrade*, **147**, pp. 83-86.
114. Sadžakov, S., Dačić, M., Cvetković, Z.: The orientation of the FK5 coordinate system from the meridian observations of the Sun and planets, *Publikacije Astron. ops. Beograd*, **44**, pp. 23-26.
115. Sadžakov, S., Dačić, M.: Tatomir P. Andjelić (in memoriam), *Bulletin astronomique de Belgrade*, **148**, pp. 71-72.
116. Sadžakov, S., Dačić, M., Cvetković, Z.: Characteristics of the Belgrade catalogue of double stars, *Ann. Shanghai Obs., Acad. Sin.*, **14**, pp. 95-99.

**1994**

117. Sadžakov, S., Dačić, M., Cvetković, Z.: The accuracy estimate for star positions in the vicinity of radio sources in zone  $-30^\circ$  to  $+60^\circ$  obtained with LMC in Belgrade, *Bulletin astronomique de Belgrade*, **149**, pp. 1-7.
118. Dačić, M., Sadžakov, S., Cvetković, Z.: Results of observations of the Sun and planets with the Belgrade large meridian circle, *Bulletin astronomique de Belgrade*, **149**, pp. 21-26.
119. Sadžakov, S., Cvetković, Z., Dačić, M.: The influence of the spectral type of a star on its declination, Proc. Conference on Astrometry and Celestial Mechanics: Dynamics and astrometry of natural and artificial celestial bodies, eds. K. Kurzyńska, F. Barlier, P. K. Seidelmann, I. Wytrzyszczak, A. Mickiewicz Univ., Poznań (Poland), Astronomical Observatory, pp. 413-417.

**1995**

120. Dačić, M., Sadžakov, S., Cvetković, Z.: Odredjivanje položaja zvezda u okolini radio-izvora, *Publikacije Astron. ops. Beograd*, **48**, pp. 77-85.
121. Sadžakov, S., Šaletić, D.: Astrometrijski značaj posmatračkih podataka, dobijenih pomoću Zemljinih veštačkih satelita Tycho i Hipparcos, *Publikacije Astron. ops. Beograd*, **48**, pp. 101-115.
122. Sadžakov, S., Cvetković, Z.: Medjunarodni programi meridijanskih posmatranja, *Publikacije Astron. ops. Beograd*, **48**, pp. 117-125.
123. Dačić, M., Sadžakov, S., Cvetković, Z.: Observations of the Sun and planets with the Belgrade large meridian circle, *Bulletin astronomique de Belgrade*, **151**, pp. 81-84.

124. Sadžakov, S., Jovanović, B. D.: The role of fundamental astrometry in astronomical research, *Publikacije Astron. ops. Beograd*, **49**, pp. 191-193.
125. Sadžakov, S., Cvetković, Z., Dačić, M.: International special programmes of meridian observations of reference and programme stars, *Publikacije Astron. ops. Beograd*, **49**, pp. 195-199.
126. Sadžakov, S., Damjanović, G., Ninković, S.: Multidisciplinary studies of the variations in the Belgrade mean latitude, *Publikacije Astron. ops. Beograd*, **49**, pp. 201-205.
127. Sadžakov, S., Cvetković, Z., Dačić, M.: Influence of the spectral type of a star on the determination of its declination, *Ann. Shanghai Obs., Acad. Sin.*, **16**, pp. 84-88.
128. Sadžakov, S., Dačić, M., Cvetković, Z., Tolchel'nikova-Murri, S. A.: Equator and equinox corrections from the Sun and planet observations made at the Belgrade Observatory, *Bulletin astronomique de Belgrade*, **152**, pp. 95-97.

### 1996

129. Sadžakov, S., Dačić, M., Cvetković, Z.: A position catalogue of 146 HLS stars and 78 radio stars observed with the Belgrade meridian circle, *Bulletin astronomique de Belgrade*, **153**, pp. 1-18.
130. Sadžakov, S., Ninković, S.: Andrej Antonović Nemiro (1909-1995), *Vasiona*, **44**, pp. 60-60.
131. Sadžakov, S., Cvetković, Z., Dačić, M.: The use of the meridian observations of the Sun and the planets for the purpose of the fundamental-coordinate-system orientation, Proceedings, 2. Hellenic Astronomical Conference, eds. M. E. Contadakis, J. D. Hadjidemetriou, L. N. Mavridis, J. H. Seiradakis, Hellenic Astronomical Society, Thessaloniki, pp. 151-154.
132. Sadžakov, S., Dačić, M., Cvetković, Z.: The accuracy estimate for star positions in the vicinity of radio sources in zone  $-30^\circ$  to  $+60^\circ$  obtained with LMC in Belgrade, Proceedings, 2. Hellenic Astronomical Conference, eds. M. E. Contadakis, J. D. Hadjidemetriou, L. N. Mavridis, J. H. Seiradakis, Hellenic Astronomical Society, Thessaloniki, pp. 164-168.

### 1997

133. Sadžakov, S., Dačić, M., Cvetković, Z.: Position catalogue of 351 stars situated in the vicinity of radio sources observed with the Belgrade meridian circle, *Bulletin astronomique de Belgrade*, **155**, pp. 3-25.
134. Sadžakov, S., Damjanović, G.: The characteristics of the Belgrade meridian circle and its contribution to the fundamental astrometry, *Bulletin astronomique de Belgrade*, **155**, pp. 89-96.

### 1999

135. Sadžakov, S., Jovanović, B.: Life and scientific activity of Professor Branislav M. Ševarlić, *Serb. Astron. J.*, **159**, pp. 93-104.

### 2000

136. Sadžakov, S., Dačić, M., Cvetković, Z.: Life and scientific activity of Dušan Šaletić (1927-1999), *Serb. Astron. J.*, **161**, pp. 97-100.

### 2003

137. Sadzhakova, S. Dachich, M., Tsvetkovich, Z., Ninkovich, S.: Mitrofan Stepanovich Zverev: vzglyad iz Belgrada, Sbornik statej i vospominanij k 100-letiyu so dnya rozhdeniya chlena-korrespondenta AN SSSR M. S. Zvereva, editor-in-chief D. D. Polozhentsev, Rossijskaya Akademiya Nauk, Glavnaya (Pulkovskaya) astronomicheskaya observatoriya, Sankt-Peterburg, pp. 71-74.

### 2008

138. Trajkovska, V., Protitch-Benishek, V., Sadžakov, S.: Large meridian circle of the Belgrade Observatory: four decades of activity and existence, *Publikacije Astron. ops. Beograd*, **85**, pp. 187-188.

*Acknowledgements* – This research has been supported by the Ministry of Education and Science of the Republic of Serbia (Project No 176011 "Kinematics and Dynamics of Celestial Bodies and Systems").

## ЖИВОТ И НАУЧНА АКТИВНОСТ СОФИЈЕ САЦАКОВ (1929-2009)

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Излаже се кратка биографија праћена списком објављених радова за Софију Саџаков (1929-2009), истакнутог српског астронома

чија је главна област истраживања била фундаментална астрометрија.