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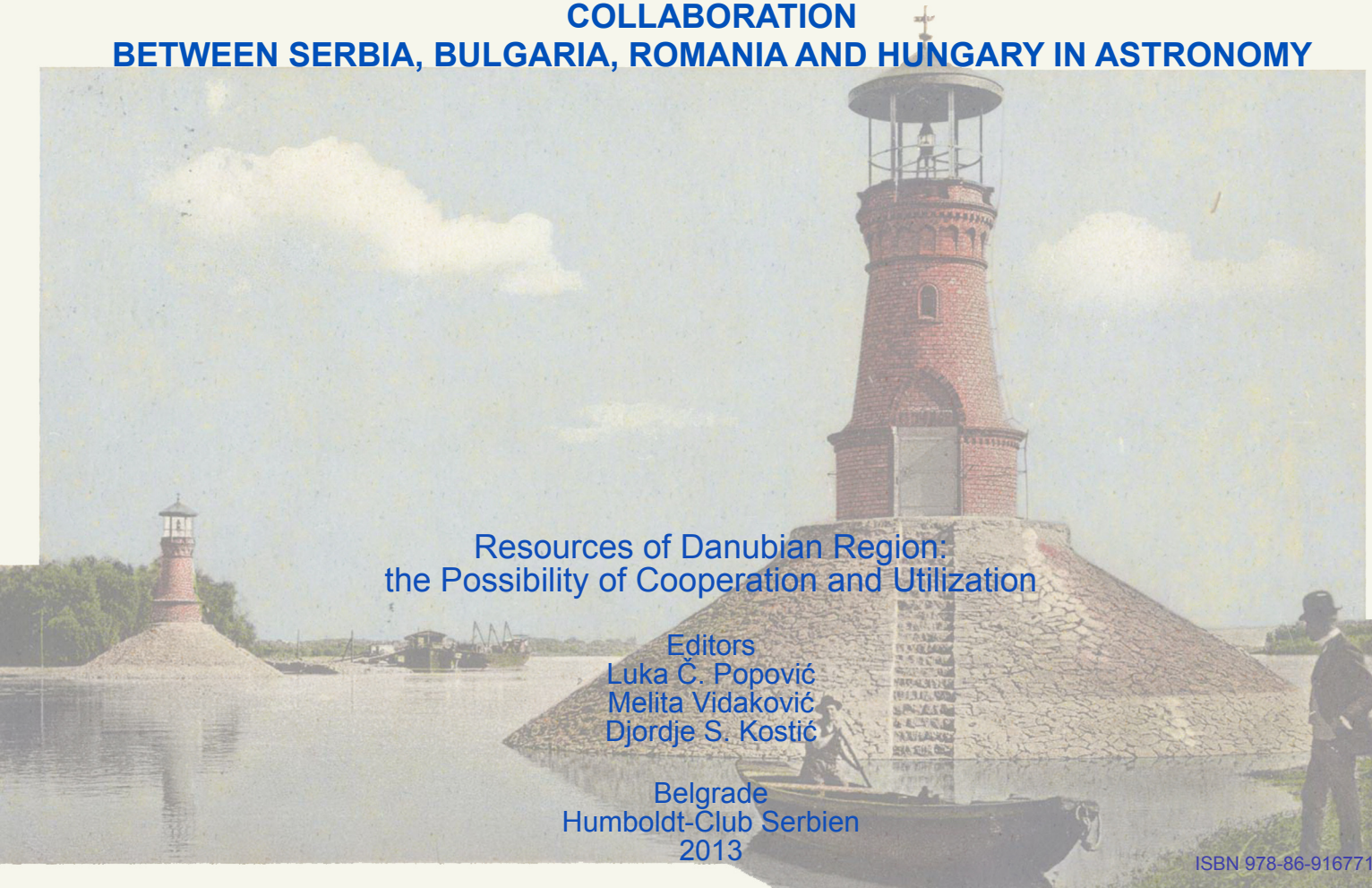
COLLABORATION BETWEEN SERBIA, BULGARIA, ROMANIA AND HUNGARY IN ASTRONOMY



Resources of Danubian Region:
the Possibility of Cooperation and Utilization

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Belgrade
Humboldt-Club Serbien
2013

ISBN 978-86-916771-1-4

Abstract. The collaboration, joint activities and contacts of astronomers in Serbia, Bulgaria, Romania and Hungaria and possibilities for further development of collaboration in this region, have been reviewed.
Key words: Astronomy: Serbia, Bulgaria, Romania, Hungaria; Astronomy: collaboration

1. **Introduction**

When in 1994, we were appointed to the post of Director of Astronomical Observatory, the principal targets for scientific collaboration in astronomy were the western countries and Russia. Collaboration with neighbouring countries, was very weak. With Romania practically not existed, while with Bulgaria scarce visits were exchanged. With Hungary, existed only non official collaboration including mainly astronomers from Hungarian minority in Serbia.

One of our aims was to develop particularly the collaboration and contacts with neighbournig countries, first of all Bulgaria, Romania and Hungary, since we are close and it is not expencive to come, say with young astronomers from Observatory, which is not possible for distant countries, and to unify our human forces and astronomical resources to improve our scientific work.

In this contribution, we will review the development and present state of collaboration, joint activities and contacts of astronomers in Serbia, Bulgaria, Romania and Hungary and possibilities for further development of collaboration in this region.

2. **Collaboration in Astronomy with Bulgaria**

If one looks the present status of astronomical resources and research, Bulgaria has the most developed astronomy in comparison with Romania and Hungary, and also the most intensive contacts and collaboration with Serbian astronomers.

The Sofia University Astronomical Observatory was built in 1892 and equipped with a 16 cm Grubb telescope for educational purposes, as well as for scientific observations. National Astronomical Observatory in the frame of the Bulgarian Academy of Sciences was build on Rozhen in Rhodopes and opened officially in 1981, but yet in 1980 the 2m Ritchey-Chrétien-Coudé telescope (Carl Zeiss, Jena) saw its first light. It was the largest telescope in South-East Europe up to 2007, when it was replaced by the 2.3 m Ritchey-Chrétien Telescope (Carl Zeiss, Jena) of Chelmos Observatory (Greece) in Northern Peloponnese.

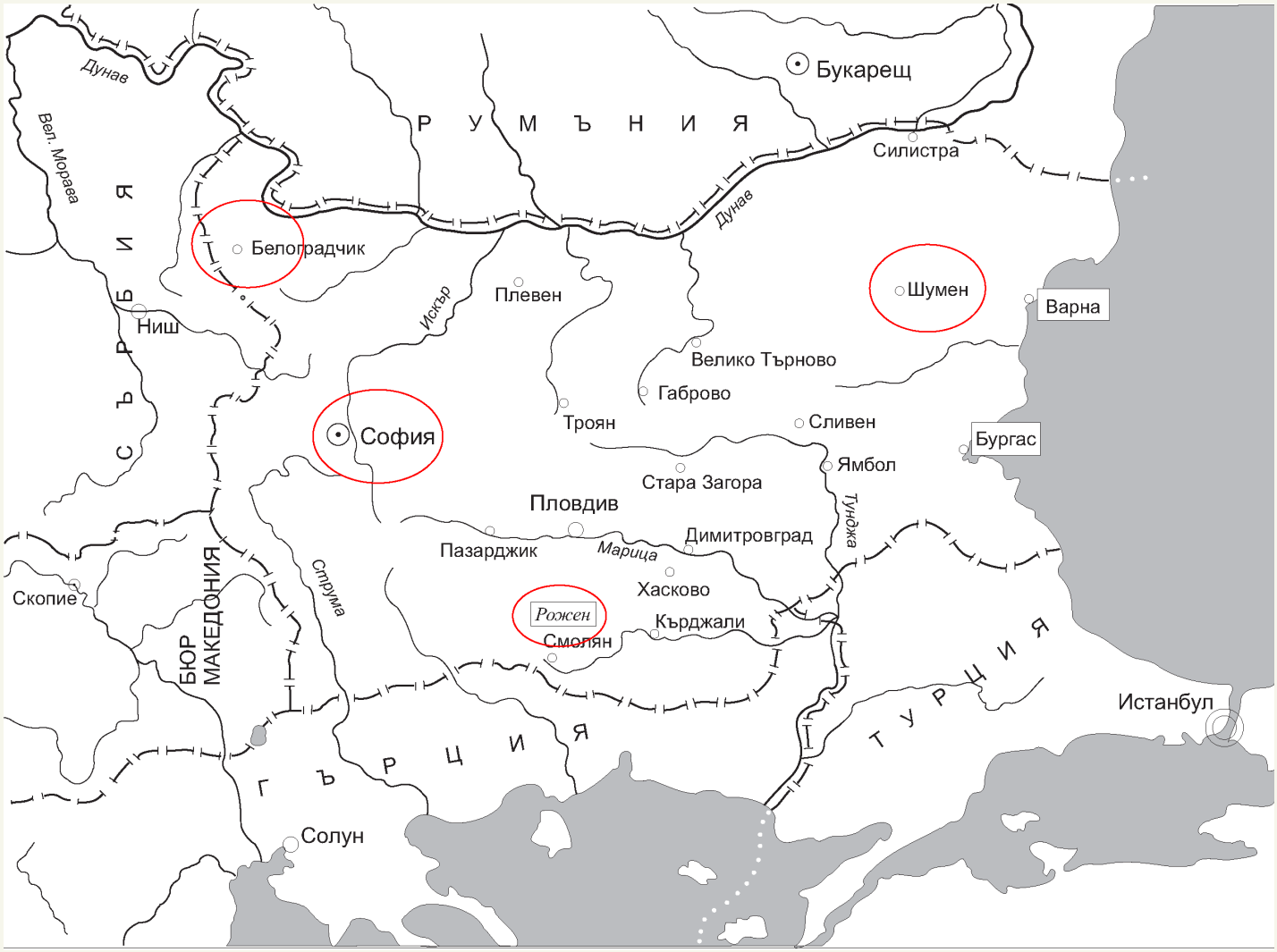


Fig. 1. Sites with astronomical institutions and observatories in Bulgaria.

Bulgaria also has two cosmonauts, astronomical institutions or observatories in Sofia, Rozhen, Belogradchik and Shumen about 100 professional astronomers and a large number of amateurs-astronomers.

The largest astronomical organization in Bulgaria is the Institute of Astronomy of the Bulgarian Academy of Sciences (http://www.astro.bas.bg), with two observatories: the National Astronomical

Fig 2. Katya Tsvetkova and Milan S. Dimitrijević in front of the dome of 2 m telescope on Rozhen.

Observatory – Rozhen, located in the Rhodopes (1750 m above the see level), and the Astronomical Observatory in Belogradchik. Institute publishes Bulgarian Astronomical Journal (as continuation of the earlier published Astrophysical Investigations) and, annually, Astronomical Calendar.

The National Astronomical Observatory – Rozhen has the largest telescope in comparison with Hungary, Romania and Serbias, having the mirror of two meters, where Serbian astronomers observe together with Bulgarian colleagues.

The Astronomical Observatory in Belogradchik has been founded in 1961. It is equipped with the 60 cm Cassegrain telescope with CCD camera and automated electrophotometer and with the Celestron telescope – 35 cm Schmidt-Cassegrain.

In Sofia is also Space Research Institute of the Bulgarian Academy of Sciences (http://www.space.bas.bg) and Department of Astronomy of the Faculty of Physics of the Sveti Kliment Ohridski University in Sofia (http://www.phys.uni-sofia.bg/~astro), and in Shumen the Astronomical Center of the Episkop Konstantin Preslavski Shumen University, established in 1997 (http://astro.shu-bg.net/index.htm).

Fig. 3. Belogradchik observatory.

On JENAM Conference in Catania (1995) author of this paper met Bulgarian astronomer Asen Mutafov, and talk with him about his wish to collaborate with Bulgarian astronomers. He also underlined that due to the closeness of the Serbian and Bulgarian languages a Serbian-Bulgarian Astronomical Meeting will be of interest. Mutafov

indicated to him Milcho Tsvetkov, as the convenient person to start collaboration. Author of this contribution and Tsvetkov met for the first time on JENAM conference in Perea near Thessaloniki in 1997 and considered the possibilities for collaboration and the organization of a Meeting of Bulgarian and Serbian astronomers (Dimitrijević and Tsvetkov 2007).

Next year, in May 1998, we visited Istambul and Sofia where we were the guest of Milcho Tsvetkov. We decided to organize Bulgarian-Serbian Astronomical Meeting the same year in August, in Belogradchik observatory of the Bulgarian Academy of Sciences. Author of this paper explained, that when existed common Yugoslav television where Macedonian and Slovenian were spoken every day without translation, it was normal that for example a Serb and a Macedonian talk each in its own language and understand each other. We agreed that working languages of the common meeting should be

Fig. 4. Participants of the First Bulgarian-Serbian Astronomical Conference in 1998.
In front: Georgi Ivanov, Mijat Mijatović, Milan S. Dimitrijević, Miltcho Tsvetkov, Aleksandar Antov.

Bulgarian and Serbian, suposing that after a couple of meetings, all, and in particular young astronomers, will understand each other talking each in his own language.

Consequently, the first meeting, has been organized in Belogradchik from 5 to 8 August 1998 (Dimitrijević et al. 1998). Co-chairmen of Scientific Organizing Committee (SOC) were Georgi Ivanov and Dimitrijević. Fifteen Serbian participants came with a bus and in Belogradchik waited for us eighteen Bulgarian astronomers and Mijat Mijatović from Macedonia. During this conference, Bulgarian, Serbian and Macedonian participants had an informal agreement on the common use of some Rozhen and Belogradchik observatory facilities, which was the first preparation for the later observations of Serbian astronomers on 2 m telescope on Rozhen and educational observations of some Serbian students on Belogradchik observatory. Proceedings with 13 papers in Bulgarian, Serbian and English were published as Publications of Astronomical Observatory of Belgrade (Dimitrijević et al. 1998).

The second conference was from 23 to 26 June 2000 in Gamzigradska Banja near Zaječar, in the hotel of Timok electro-distribution company, besides the first hydroelectric power station in this area, build by the director (1899-1900) of the Belgrade astronomical observatory, the first Serbian astrophysicist and rector of Belgrade University Djordje Stanojević (Dimitrijević et al. 2000).

These two conferences and the beginning of collaboration, initiated the organization of the Balkan Meeting of Young Astronomers, held in September 2000, at the Astronomical Observatory in Belogradchik. The idea was to put into "interaction" not only professional astronomers, as in two previous meetings, but also relatively young people, not only from Serbia and Bulgaria, but from all Balkan countries (Antov et al. 2001).

Two years later, in 2002, the Third Bulgarian-Serbian Astronomical Meeting was organized from May 13 to 15 on Gjolechitsa on Rila in Bulgaria, with about 30 participants. The official languages were Bulgarian and Serbian, with insertion of English words only when necessary. Proceedings with 34 articles were published as Publications of Astronomical Observatory of Belgrade (Ivanov et al. 2002).

From 21 to 24 April 2004, we organized in Belgrade the Fourth Serbian - Bulgarian astronomical conference. Participants were 28 from Serbia, 19 from Bulgaria and 2 German astronomers and physicians. Proceedings were published as Publications of the Astronomical Society "Rudjer Bošković (Dimitrievć et al. 2005).

The Fifth Bulgarian – Serbian astronomical conference on "Astronomy and Space Science," has been in Sofia, May 9-12 2006, with the participation of 19 Serbian atronomers, 59 Bulgarian and one from France (Tsvetkov et al. 2007).

The next one, Sixth Serbian – Bulgarian astronomical conference, was in Begrade, May 7-11 2008, with 65 participants – 40 Serbian, 17 Bulgarian, 3 Ukrainian, 1 Russian, 1 Turk, 1 Czech and 1 French astronomers (Dimitrijević et al. 2009).

The Seventh Bulgarian – Serbian astronomical conference on "Astroinformatics", was in Chepelare, June 1-4 2010. Participated 61 astronomers – 32 Bulgarian, 21 Serbian, 3 Czech, 2 German, 2 Russian and one French (Tsvetkov et al. 2012).

The recent one, Eight Serbian – Bulgarian astronomical conference, was held in Leskovac, from 8 to 12 May 2012, with 61 participants, 29 Serbian, 31 Bulgarian and 1 Czech astronomers (Dimitrijević and Tsvetkov 2013).

Fig. 5. Participants of the VIII Serbian – Bulgarian astronomical conference in front of St. Nicholas monastery (XII century) in Kuršumlija.

We note, that in comparison with the first conferece, the number of participants is now almost doubled and proceedings have about 3.5 times more pages. Our aim is also that all proceedings are refered in ADS (http://adsabs.harvard.edu/abstract_service.html) and the majority is always there. Moreover, we try that covers of our proceedings are prepared in an artistic way and in Fig 6 is presented an example.

After the conference we produce as well a CD rom or DVD with proceedings, and additional material like photos, videos, presentations… These electronic sources are included on line in Serbian Virtual Observatory (http://servo.aob.rs/eeditions/SerBul.php) and in Sofia on the web site http://195.96.237.152:12333/anonymous/.

We would like to underline the success of this collaboration between astronomers in Serbia and Bulgaria, separated mostly artificially for years, not only due to political reasons, but also due to the lack of initiative and since the priority were scientific contacts with more advanced but also more distant countries. These conferences were very important for the development of mutual scientific contacts, planning of joint research and common projects (as the project between Serbian Academy of Sciences

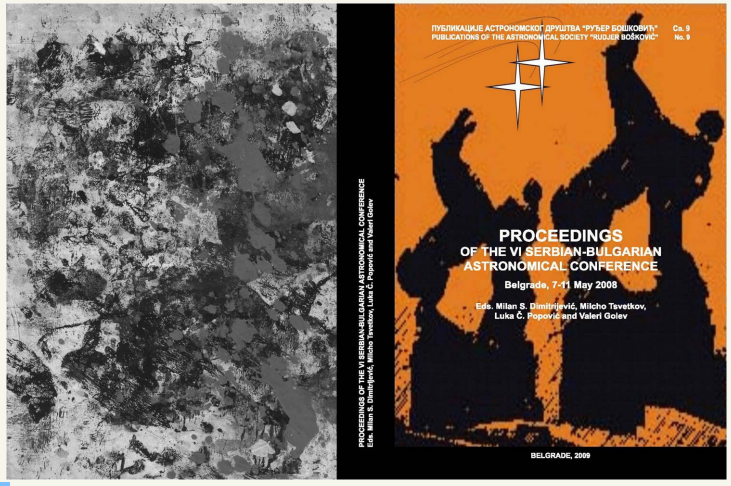


Fig. 6. Proceedings of the VI Serbian Bulgarian astronomical conference.

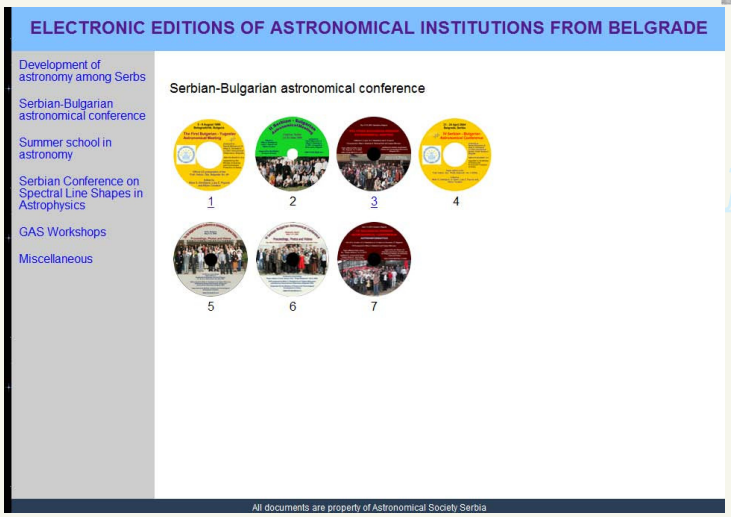


Fig. 7. Web page in Serbian Virtual Observatory with CDs and DVDs of Serbian-Bulgarian and Bulgarian-Serbian Astronomical Conferences.

and Arts and Bulgarian Academy of Sciences on Astronomical databases and digitization and archiving of around 15000 photo plates on Belgrade Observatory – see Tsvetkova et al. 2009), using the facilities of the National Astronomical Observatory Rozhen, with 2 m telescope and also of the Belogradchik Observatory.

3. **Collaboration in Astronomy with Romania**

Astronomical observatory in Bucharest has been founded in 1908. After that, in 1913 a small Observatory at the Jassy University, than in 1920 in Cluj-Napoca and in 1969 in Timisoara have been founded. In 1990, Observatories in Bucharest, Cluj-Napoca and Timisoara formed the Astronomical

Fig. 8. Sites with astronomical institutions and observatories in Romania.

Institute of the Romanian Academy. The bigest telescopes are 50 cm Cassegrain telescope in Bucharest and 50.8 cm Gauthier-Prin type reflector mounted on Feleac hill, 8 km outside Cluj-Napoca. One Romanian astronaut, Dumitru Prunariu, performed within the Intercosmos programme an eight day mission on board of Soyuz 40 and the Salyut 6 space laboratory together with Leonid Popov in May 1981.

In reports on activity of Belgrade Astronomical Observatory there is no evidence on collaboration with Romanian astronomers or on the exchange of visits, before 1967, when, as the first mutual visits

of Serbian and Romanian astronomers, were registered the 6 day visit of Pero Djurković, Director of Belgrade Observatory, to Bucharest Observatory in October, and the 9 day visit of Nicolae Dinulescu to Belgrade in the same year (Djurković 1969). The evidence of visit of Pero Djurković exists also in the Guest book of Bucharest Observatory (Fig. 9). It is obvious that Pero Djurković, who was director of Belgrade observatory (1965-1970) at that time, was the first who tried to establish collaboration and regular exchange of visits with Romanian astronomers. After this first exchange of visits, in 1968, in Bucharest were (Djurković 1969). Dragomir Olević 30 days and Djordje Teleki 12 days and in Belgrade Ludmila Rusu 27 days, Constantin Dramba 9 days and Victor Stavinschi 10 days.

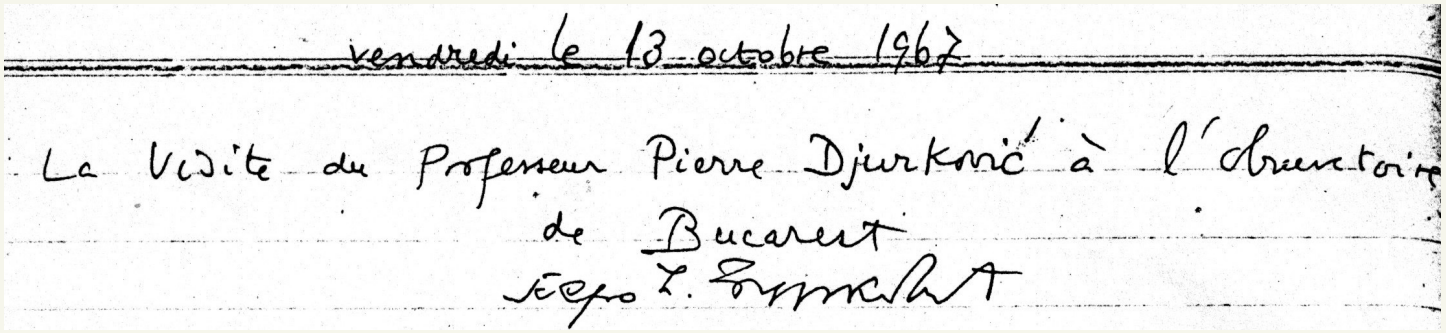


Fig. 9. Inscription of Pero Djurković in the Guest book of Bucharest Observatory: *Friday, 13 October 1967. Visit of Professor Pierre Djurković to the Bucharest Observatory. Pero M. Djurković.* (Dimitrijević 2005)

It seems that with the end of directorship of Djurković in 1970, ended any initiative for further collaboration, since after this we have an emptiness of 25 years without any inscription of Serbian astronomers in the Guest book of Bucharest Astronomical Observatory.

Author of this article has been appointed to the duty of Director of Belgrade Astronomical Observatory, in November 1994. Wishing to establish the collaboration of Serbian astronomers with neighboring countries, he writed a letter to Magda Stavinschi, director of the Astronomical Institute of Romanian Academy, proposing to exchange visits and to sign an agreement of collaboration of two institutions. M. Stavinschi invited him to Bucharest, and, during his visit, they signed the Agreement on collaboration on 12th May 1995. This Agreement is still valid and it enabled a number of mutual visits through Romanian and Serbian Academies of Sciences. They also agreed to organize each year a round table of Romanian and Serbian astronomerts on collaboration in order to better know their work and stimulate and facilitate the collaboration.

The First Romanian-Serbian round table on cooperation in Astronomy was held on 20th of July 1995 in Timisoara. From Serbia attended eight participants. The Second Yugoslav-Romanian round table on cooperation in astronomy was organized in Belgrade on 8th October 1996, before the XI National Conference of Yugoslav Astronomers (Belgrade, 9-11.10.1996) so that Romanian guests may attend the both. Participants were six Romanian and twelf Serbian astronomers.

The next year, was organized the Third Romanian-Yugoslav round table on cooperation in Astronomy in Cluj-Napoca on 6th September 1997, after 3rd General Conference of the Balkan Physical Union (Cluj-Napoca, 2-5 09 1997). From Serbia attended six astronomers.

The Fourth Yugoslav-Romanian Astronomical Meeting was organized as a Conference and held from 5 to 8 May 1998 in Belgrade. List of participants (Dimitrijević and Popović 1998) has 57 names, and from Romania attended (Dimitrijević and Stavinschi 2008) Magdalena Stavinschi, Vasile Mioc, Petre Popescu, Georgeta Maris, Cristina Blaga, Adrian Cristea, Dan Moldovan, Alexandru Horvat and Laslo Farkas. Conference Proceedings (Dimitrijević and Popović 1998) have 245 pages, and sections were Astrophysics (19 papers), Astrometry (7 papers), Celestial Mechanics (6), Total Solar Eclipse on August 11 1999 (3), and Astronomy in Archaeology, History and Culture (17), totally 52 papers.

Fig 10. Participants of the IV Romanian-Yugoslav Astronomical Meeting, Belgrade 5-8 May 1998. First row: Edi Bon, Ištvan Vince, Radomir Petrović, Sanja Erkapić, Miodrag Dačić, Dragomir Olević. Second row: Radomir Djordjević, Nataša Popović, Jelena Milogradov Turin, Milan S. Dimitrijević, Magda Stavinschi, Georgeta Maris, Katalin Barlai, Dragana Tankosić, Aleksandar Kubičela. Behind: Vesna Živkov, Dan Moldovan, Milorad Djokić, Predrag Jovanović, Vasile Mioc, Petre Popescu, Aleksandar Tomić, Zorica Cvetković, Slobodan Ninković, Luka Č. Popović, Zoran Knežević, Cristina Blaga, Adrian Cristea, Božidar D. Jovanović, Vlado Milićević, Snežana Marković-Kršljanin, Milutin Tadić.

Due to political presure at this times when Serbia was bombarded by NATO, it was the last common conference.

However, due to these common meetings of Romanian and Serbian astronomers we established mutual relationships, we now know each other, our work and activities. They also were important for the latter organization of Balkan and South Eastern Europe Astronomical Conferences. We note that the billateral agreements through both Academies, signed in 1995, are still active, resulting in closer relations and mutual invitations to other, more specialized conferences on various topics.

4. **Collaboration in Astronomy with Hungary**

In 1899, the landowner, astronomer and physician Miklós Konkoly-Thege donated his well equipped private observatory at Ógyalla, founded in 1871 to the Hungarian state. After the Great War, Ógyalla became Hurbanovo in Slovakia and a part of instruments were the basis for new, Konkoly observatory on Buda hills. In 1958 was built the Piszkéstető Mountain Station in Mátra Mountains as a station of Konkoly Observatory. Other important observatories in Hungary are Heliophysical Observatory in Debrecen and Gothard Observatory in Szombathely. A small observatory in Baja is also important for the history of

Fig. 11. Sites with astronomical institutions and observatories in Hungary.

relations of Serbian and Hungarian astronomers. Hungaria has an astronaut, Bertalan Farkas, who was launched into space on Soyuz 36 in 1980, together with Russian cosmonaut Valeri Kubasov.

Fig. 12. Piszkesteto Mountain Station.
The dome of 1 m Ritchey-Chrétien telescope.

The history of mutual contacts of Serbian and Hungarian astronomers is oldest if one compares three considered countries. Yet at the end of ninetenth and beginning of twentieth centuries existed contacts of the founder of Astronomical Observatory in Belgrade, Milan Nedeljković, and Miklós Konkoly-Thege, who visited Belgrade in 1902 (Dimitrijević 1987). Appart with Konkoly Observatory, contacts were established also with astronomers in Debrecen, Baja, Szombathely and a Hungarian-Yugoslav astronomical conference was organized in Baja, 1995 (Vince et al. 1995). However, there was no interest from Hungarian side for the second one which was planned to be in 1997 in Sombor and which preparations started.

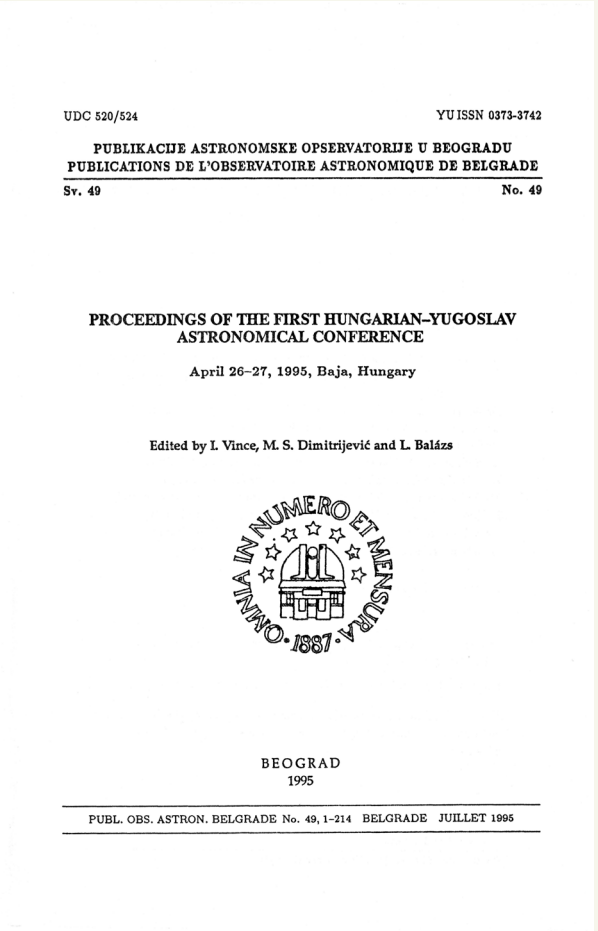
It is interesting that in spite of numerous contacts, involving particularly astronomers from Hungarian minority in Serbia, this is only, from three considered countries, without an official astronomical project of collaboration.

5. Conclusion

Recent history of collaboration and attempts for collaboration of astronomers in Serbia with their colleagues in Bulgaria, Romania and Hungary is presented. Each case is particular and results are very different. The best contacts are with Bulgarian astronomers which is in particular important, since they

have the biggest telescope in the considered area, 2 m RCC reflector, and Serbian astronomers observe now on it.

The development of collaboration in astronomy between neighbouring countries has many advantages, the common use of telescopes and other facilities and much lower expences in comparison with more distant countries, which make easier the unification of forces and stimulate the common investigations.



UDC 520/524 YU ISSN 0373-3742

PUBLIKACIJE ASTRONOMSKE OPSERVATORIJE U BEOGRADU
PUBLICATIONS DE L'OBSERVATOIRE ASTRONOMIQUE DE BELGRADE

Sv. 49 No. 49

PROCEEDINGS OF THE FIRST HUNGARIAN–YUGOSLAV ASTRONOMICAL CONFERENCE

April 26–27, 1995, Baja, Hungary

Edited by I. Vince, M. S. Dimitrijević and L. Balázs

OMNIA IN NUMERO ET MENSURA · 1887 ·

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Fig. 13. Proceedings of the First Hungarian-Yugoslav Astronomical Conference.

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