

THE BELISSIMA PROJECT

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Abstract. In this contribution the BELISSIMA (BELgrade Initiative for Space Science, Instrumentation and Modelling in Astrophysics) project of the Astronomical Observatory of Belgrade is described and the most important activities since its beginning in July 2010 are presented.

1. INTRODUCTION

BELISSIMA is the three-year long FP7 (Seventh Framework Programme) project (call FP7-REGPOT-2010-5; funding scheme is "CSA Coordination and support action") which was initiated in July 2010. The project is coordinated by the Astronomical Observatory of Belgrade (AOB) and is the most ambitious infrastructural project undertaken recently by AOB. BELISSIMA was evaluated very favourably by the European Commission and obtained 14.50 out of 15.00 points; its "scientific and/or technological excellence" was highly regarded and BELISSIMA obtained maximal 5.00 points. The approval of the project was thus explained: "The BELISSIMA is an excellent project which is perfectly targeted and very clearly described. (...) The proposal to upgrade the research capacity of the AOB is based on the excellent competence and research activities which are on the cutting-edge of astrophysics and astronomy".

2. WORK PACKAGES

The BELISSIMA project consists of five work packages (WPs) which are listed below with their leaders. The coordinator of BELISSIMA is Dr. Srdjan Samurović.

WP1: Preparations and reinforcement of AOB (leader: Dr. Zoran Knežević)

WP2: Purchase, installation and testing of optical equipment (leader: Dr. Ištvan Vince)

WP3: Human potential, training and public outreach (leader from March 2011: Dr. Miroslav Mičić; until March 2011 the leader was Dr. Luka Č. Popović)

WP4: Dissemination and promotional activities (leader: Dr. Milan Ćirković)

WP5: Project management (leader: Dr. Srdjan Samurović)



Figure 1: The logo of the BELISSIMA project.

2. 1. WP1. PREPARATIONS AND REINFORCEMENT OF AOB

During the first year of the BELISSIMA project, the procedure for increasing and improving human resources of Astronomical Observatory Belgrade (AOB) took place in parallel with activities performed in other WPs. The Management board of the BELISSIMA project which consists of the leaders of WPs started from the beginning of 2010 (as soon as the positive outcome of the proposal was announced) to intensify the contacts with candidates for a total of 72 months of engagement intended for recruited researchers. This task, which required a significant knowledge of the local legal procedures, was successfully handled by Director of AOB, Dr. Zoran Knežević, the head of WP1.

The first researcher, Dr. Milan Bogosavljević was hired on July 15th, 2010. Dr. Milan Bogosavljević was born in Niš in 1977. He graduated from the University of Belgrade, Faculty of Mathematics, Serbia and obtained his PhD from California Institute of Technology (CalTech). He is an expert in observational astronomy with a significant experience with observations with the world's largest telescopes (such as Keck). Immediately after his hiring Dr. Bogosavljević was appointed technical director of the Vidojevica Astronomical Station (VAS) and initiated his numerous activities related to the design and construction of the planned telescope "Milanković" to be mounted at VAS.

He made numerous trips around Europe within the scope of the BELISSIMA project for the purpose of establishing the optimal design of the planned 1.50 m-class telescope and the construction of the dome where the telescope will be mounted; he visited VAS on numerous occasions and participated in performing final activities regarding the mounting of the 60cm telescope purchased by AOB using the funds from Ministry of Science and Technological Development of Republic of Serbia and mounted at VAS; he worked with young researchers at AOB providing help with various aspects of observational activities and reductions of observations.

The second researcher, Dr. Miroslav Mičić was hired on March 16th, 2011. Dr. Miroslav Mičić was born in Belgrade in 1977. He graduated from the University of Belgrade, Faculty of Mathematics, Serbia and obtained his PhD from the Pennsylvania State University. He joined the BELISSIMA project coming from the University

of Sydney where he had been working. He is an expert in astrophysical simulations, astronomical data processing and visualization of astronomical data. The activities of Dr. Mičić include: he initiated the collaboration with young researchers at AOB regarding start of various research projects with numerical astrophysical simulations; he was appointed leader of WP3 of the BELISSIMA project; he joined the work of Dr. Srdjan Samurović, Dr. Milan Ćirković, Dr. Bogosavljević, AOB librarian Ms. Vesna Mijatović and designer of the publication Ms. Ivana Horvat and helped in the final stages of the production of the bi-lingual brochure dedicated to AOB and BELISSIMA; he presented opportunities for the future research on supercomputers in Serbia with the talk on “Supermassive Black Holes” in the amphitheater of the department of Natural Science and Mathematics, Niš University; he featured as guest at the astronomy seminar in the Research Center in Petnica.

The negotiations with the third candidate who will come from abroad to take part in the BELISSIMA project are underway and thus full 72 months of engagement intended for recruited researchers will be covered.

2. 2. WP2. PURCHASE, INSTALLATION AND TESTING OF OPTICAL EQUIPMENT

From the very beginning of BELISSIMA the Management board of the project began to work on the selection of the optimal configuration of the 1.50m-class telescope to be purchased and mounted at the top of Vidojevica. The telescope will be named “Milanković” after the famous Serbian astronomer. Several manufacturers of telescopes were contacted and they provided their estimates of prices. The Management board of BELISSIMA applied to Ministry of Science and Technological Development of the Republic of Serbia (now Ministry of Education and Science of the Republic of Serbia) for additional funds needed for a purchase of a high quality 1.50m-class telescope. We have asked for additional funds through a national project no. 176021, “Visible and Invisible Matter in Nearby Galaxies: Theory and Observations” (led by the coordinator of the BELISSIMA project, Dr. Srdjan Samurović) that gathered 26 researchers from leading research institutions of Serbia, which would make it possible to purchase a telescope with targeted performances. The funds were granted and we expect to successfully conclude the activity of design, construction, purchase and installation of 1.50 m robotic telescope “Milanković”.

The Management board of BELISSIMA conducted numerous activities which will make the procedure smoother and technical requirements for the telescope well described and documented.

2. 3. WP3. HUMAN POTENTIAL, TRAINING AND PUBLIC OUTREACH

In the first year of activity of the BELISSIMA project numerous activities pertaining to human potential, training and public outreach were performed and below only the brief list is given. The reader is referred to the BELISSIMA Web site (see below) for the detailed information.

At the beginning of the project two events were organized. On September, 6th 2010 at AOB the meeting of the Serbian astronomical community was organized and 40 colleagues from AOB, Department of Astronomy (Belgrade University), Institute of Physics (Belgrade) and People’s Observatory from Beograd took part in the discussions related to the needs of the community regarding the new telescope. Three weeks later, the executive meeting of the BELISSIMA project took place in Proku-



Figure 2: The participants of the executive meeting “Network of Telescopes in the Western Balkans Region” held in Prokuplje from 27th to 28th September 2010.

plje, from 27th to 28th September 2010. The meeting “Network of Telescopes in the Western Balkans Region” gathered 30 participants, of which 13 were foreign experts from several European countries.

Numerous visits to various European observatories and institutes were organized: Orliakas Astronomy Station in August 2010; meeting “Big Science With Small Telescopes” held in Dornburg, near Jena, Germany, from October, 19th to 22nd 2010; observations at the Baja Observatory, Hungary (February 2011), visit to the telescopes at Tenerife and La Palma (February/March 2011); “Second Workshop on Robotic Autonomous Observatories” held in Malaga, Spain from 5th to 10th June 2011; “Hands-on Strong Gravitational Lensing School” held at Excellence Cluster Universe, Garching, Germany from 14th to 17th June 2011; summer school “Opto-Mechanical Design in Astronomy” which was held at the Astrophysical Institute of Potsdam (AIP) in Potsdam, Germany from June 20th to 23rd, 2011; the observing NEON school held at Molutai Astronomical Observatory (Lithuania) from July 14th to 27th, 2011.

Also, foreign researchers have been coming to AOB after the invitation of the BELISSIMA project: Dr. Zach Ioannou came from Thessaloniki to Belgrade where he stayed from March 28th to April 2nd 2011. Dr. Ioannou is one of the creators of the Astronomical Station Orliakas. He came for two reasons: to help with the writing of the technical documentation regarding the construction and purchasing of the telescope “Milanković” (see above) and scientific collaboration with AOB. Although his advices were mostly technical ones (parameters of the various parts of the telescope, details of the construction etc.) he also provided the participants of BELISSIMA nu-

merous administrative details regarding European tenders which is very important for BELISSIMA and AOB since this is the first time that such an international activity is expected to take place at AOB.

For the purpose of training of the AOB staff various activities were performed, such as: training at VAS, training course related to photometry and spectroscopy held at AOB in May 2011 by Dr. Istvan Vince and training of data reduction at AOB.

2. 4. WP4. DISSEMINATION AND PROMOTIONAL ACTIVITIES

We here list only a few dissemination and promotional activities: the all-sky camera at VAS recorded on November 12th, 2010 is (to the best of our knowledge) the only image of the meteor entering the atmosphere above Serbia and numerous media have taken it thus promoting the BELISSIMA project, VAS and AOB in public; AOB had the honor on November, 8th 2010 to host Prof. Sir Arnold Wolfendale, FRS, 14th Astronomer Royal and the participants of the BELISSIMA project discussed with him numerous issues; BELISSIMA has participated in the 4th Festival of Science held in Belgrade in December 2010; an article which describes the BELISSIMA project and telescope “Milanković” was published in “Danica 2011” (Samurović 2010); several BELISSIMA participants took part in various radio and TV programmes; the cooperation with Amateur Astronomers Association of Serbia has started from the very beginning of the work of the BELISSIMA project; the BELISSIMA project collaborated with the researchers from Serbian town of Niš through various initiatives – we mention here only one: Dr. Goran Sv. Djordjević who leads Southeastern European Network in Mathematical and Theoretical Physics organized a seminar “Trends in Modern Physics” for the elementary and high school teachers from Balkan countries and neighboring regions, held in August, 2011 in Niš and in agreement with the BELISSIMA project the teachers were taken to VAS and the first TV material related to BELISSIMA was shot there; several BELISSIMA participants took part in the activities of the Research Center in Petnica. The AOB brochure will be printed shortly: this is a booklet dedicated to AOB, its history, its present activity and its future which will be without doubt marked by the “Milanković” telescope. The publication is in an accessible language and presents active projects, their leaders and participants. The BELISSIMA project is also covered in detail. Finally, the first BELISSIMA Workshop was organized from 13 to 14 October 2011, after the 16th National Conference of Astronomers of Serbia: it gathered approximately 50 participants out of which 21 were foreign experts who discussed with the BELISSIMA participants various aspects of observations possible with 1.50 m-class telescope.

2. 5. WP5. PROJECT MANAGEMENT

The project management of the BELISSIMA project was done by the Management board of the project and coordinated by Dr. Srdjan Samurović. The Management board includes all the leaders of WPs and had meetings on a regular basis when the activities of the project were discussed and the tasks for a future work were created.

3. CONCLUSIONS

The BELISSIMA project is of an immense significance for Serbian science. It created favourable conditions for the return of Serbian researchers working abroad. By

constructing the “Milanković” telescope Serbia is opening doors to the new technologies in the field of optics, astronomy, informatics, and electronics. The BELISSIMA project will play an important role in improving scientific literacy in Serbia. BELISSIMA will strengthen and establish new regional collaboration with partners from the Western Balkans and with the leading European scientific institutions. In this paper the activities of the project from the beginning in July 2010 to mid-October 2011 are presented. The BELISSIMA WWW site is: <http://belissima.aob.rs> and it contains various information and news related to the project.

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