

**Agreement on the SST-1M mini-array operation
at the Ondřejov Observatory
(hereinafter the „Agreement”)**

Between

the H. Niewodniczański Institute of Nuclear Physics, Polish Academy of Sciences (IFJ PAN) representing the Polish Consortium of the Cherenkov Telescope Array Project, with its address at Radzikowskiego 152, 31-342 Kraków, Poland, represented by Prof. Dr. hab. Tadeusz Lesiak – Director General

and

the University of Geneva (UNIGE), with its address at 24 rue Général-Dufour, 1204 Geneva, represented by Prof. Brigitte Galliot, vice-Rector, and Prof. Teresa Montaruli, Principal Investigator,

and

the Institute of Physics of the Czech Academy of Sciences (FZU), with its address at Na Slovance 1999/2, 18221 Praha 8, Czech Republic, represented by RNDr. Michael Prouza, PhD, Director,

(IFJ PAN, UNIGE, FZU, hereinafter the “SST-1M Parties”),

and

the Astronomical Institute of the Czech Academy of Sciences, with its address at Fričova 298, 25165 Ondřejov, Czech Republic, represented by Prof. RNDr. Vladimír Karas, DrSc., Director *(hereinafter the “Infrastructure Provider or AI CAS”)*,

hereinafter also collectively referred to as „the Parties” or individually referred to as „the Party”.

PREAMBLE

- SST-1M Parties are the contractual parties of the agreement related to „SST-1M Mini-array Construction and Testing as Technology Demonstrator for the Cherenkov Telescope Array”, which became effective on August 21, 2017 *(hereinafter „Agreement 2017”)* and also represent the Working Group created for the purpose of implementing the Agreement 2017.

- The Working Group, pursuant to its Resolution No. 2020/1, has decided to install two small-size single-mirror Cherenkov telescopes for ground-based very-high-energy gamma-ray astronomy (*hereinafter* „SST-1M telescopes”), for the testing and calibration phase at the Ondřejov Observatory and AI CAS expressed its willingness to host SST-1M telescopes, all in compliance with the rules of article 5 of the Agreement 2017.
- The intention of the SST-1M Parties is to proceed towards the mini-array installation within a large international research infrastructure. Therefore, the SST-1M telescopes need to be assembled, fully commissioned, and their performance in stereoscopic mode needs to be validated. The Ondřejov Observatory with its perfect location and first-class science fulfils all requirements for complete performance validation.

Therefore, in consideration of the common objectives described in the Preamble, *the Parties agree as follows*:

Article 1 – Scope

1.1 The purpose of this Agreement is to establish the formal cooperation among the Parties during the installation, commissioning, and operation of the SST-1M telescopes at the Ondřejov Observatory.

1.2 The Agreement is signed as a formal and legally binding statement, subject to the fulfillment of the conditions defined below, of the type and amount of infrastructure and the scientific equipment to be delivered by the Parties to the Single-Mirror Small-Size Telescope project (*hereinafter* the „SST-1M Project”).

1.3 Nothing in this Agreement shall be regarded as creating agency, employment relationship, franchise relationship or taxable entity between the Parties.

1.4 This Agreement does not create any obligations for any Party to transfer funds to another Party unless otherwise agreed in writing.

1.5 No Party shall have the right, power or authority to create any obligations or duties, expressed or implied, on behalf of another Party.

Article 2 – Contributions of the Parties

2.1 The Parties will be responsible for contributing the items, services and expenses listed in the Appendix 1 of this Agreement under point 1) for the IFJ PAN, under point 2) for UNIGE, under point 3) for FZU and under point 4) for AI CAS as their respective contributions to the SST-1M Project.

2.2 Each item contributed in accordance with Appendix 1 remains the property of its owner. The Agreement does not change the ownership rights, unless different written arrangements are made by the Parties or legal owners of the items.

2.3 The intended schedule with planned milestones for the delivery of the items, site preparation works, installation, commissioning and operation of the telescopes is defined in the Appendix 2 of this Agreement. A change of this schedule due to unforeseen circumstances may be agreed between the Parties, which does not require a written amendment of this Agreement.

2.4 The estimated value of the respective contributions by the Parties is specified in the consolidated budget in the Appendix 3 of this Agreement.

2.5 The equipment and their elements, software, data, documentation and manuals listed under points (1), (2), (3) in the Appendix 1 will be accepted by AI CAS for a non-commercial use.

2.6 Contribution of the items under points (1), (2) and (3) in the Appendix 1 is conditional upon obtaining suitable funds and suitable permits for shipment of the scientific equipment by authorized entities for each of the SST-1M Parties.

2.7 Contribution of the items under point (4) for AI CAS in the Appendix 1 is conditional upon reception of the items from the SST-1M Parties and authorizations for the deployment of SST-1M telescopes.

2.8 IFJ PAN shall ensure that each contributing institution of the Polish Consortium of the Cherenkov Telescope Array Project (the list of Polish institutions is indicated in Agreement 2017) will contribute the items listed in Appendix 1 under point (1) to the SST-1M Project on free of charge basis and at its own cost, however, this does not affect the terms of this Agreement.

Article 3 – AI CAS Membership in the SST-1M Project

3.1 Given the provision of items in Appendix 1 under point (4), the AI CAS is recognized as a Party, participating in the SST-1M Project.

3.2 Scientists, engineers and individuals fulfilling duties in the SST-1M Project are considered individual members of the SST-1M Project. Established duties consist of the provision of items listed in Appendix 1 and also include, but are not limited to, coordination activities, scientific studies and data analysis.

3.3 Individual members of the AI CAS in the SST-1M Project enjoy full rights of access to data obtained with the SST-1M mini-array telescopes.

3.4 Under the provision of Article 3.2, the membership rights shall survive the completion of the SST-1M Project at the Ondřejov Observatory, when the SST-1M telescopes will be moved to another research facility.

Article 4 – Organization

4.1 The Working Group of the SST-1M Parties, constitutes the organizational and management structure of the SST-1M Project, as agreed in detail in the agreement executed 21st of September 2017 on the establishment of the Working Group.

4.2 The Working Group decides by consensus on the final site for the operation of telescopes and on the removal of telescopes from the Ondřejov Observatory site before the expiry of this Agreement.

4.4 The organisation of the SST-1M Project for operation and testing at Ondřejov Observatory is defined in the Project Organigram in the Appendix 4. Decisions for the operation of the telescopes at the Observatory will be taken by the Steering Board by consensus, when possible, otherwise by simple majority vote.

4.5 The Steering Board comprises the Working Group of the SST-1M Parties, the representative of AI CAS and the Project Manager, who represents the Work Package coordinators. The Steering Board shall consult Work Package coordinators for relevant decisions.

Article 5 – Operation

5.1 Detailed necessary technical arrangements will be determined after the necessary funds have been received, the necessary authorizations have been delivered and the items have been procured, in accordance with the common objective defined in the Preamble.

5.2 The modalities of delivery of the items listed in the Appendix 1, including transportation logistics, valuation, liability and insurance, installation and use and also methods of arrangements for infrastructure construction and payments for site preparation and operation costs, will be subject to individual bilateral agreements between the Parties of this Agreement, if needed.

5.3 There will be a local run coordinator from AI CAS and a weekly remote shift leader. Remote shift responsibilities between the SST-1M Parties are agreed every 3 months. Share of

shifts should be proportional to the number of members from each of the 4 Parties, listed in the SST-1M author list referred to in the Article 6.3. Compensation will be agreed for time spent on repairs and technical work.

Article 6 – *Publication Policy*

6.1 Publication include articles in scientific journals, conference proceedings, webpages, posters and oral presentation, as well as abstracts or summaries of these.

6.2 Any publication using data produced by the SST-1M telescopes, Monte Carlo models based on telescopes, or data produced by an SST-1M sub-system including software will be an SST-1M Project publication.

6.3 All SST-1M Project publications will be signed by authors listed in the SST-1M author list, approved by the Working Group. The author list is revised at least every 6 months. Authors have the right to withdraw their names from a publication with an explicit communication to the Working Group in written form, including e-mails.

6.4 Any individual member of the SST-1M Project may propose a publication. A publication needs to be presented to the Working Group before any actual submission or release is done.

6.5 If accepted by the Working Group, the publication should be reviewed by the members of the SST-1M Project and the final version should be approved by the Working Group before its submission.

6.6 The publication has to be circulated at least 14 days before the intended submission deadline.

6.7 In case no feedback is given from the members of the SST-1M Project within 14 days from its circulation, a silent consent is assumed, and the publication may be submitted.

Article 7 – *Confidentiality*

7.1 This Agreement will not affect any rights of the Parties to material or intellectual property to the items listed in the Appendix 1 which constitute the background of each Party. The intellectual property rights to the SST-1M telescope elements belong to the relevant SST-1M Parties. For the avoidance of any doubt, no license of a Party's background is automatically granted to any other Party.

7.2 Any data/information belonging to the SST-1M Parties and designated as confidential shall not be disclosed to third parties, without written consent.

7.3 Each Party of this Agreement agrees to keep confidential all data and information belonging to another Party of this Agreement and designated as confidential, with which they come in contact during the execution of the SST-1M Project, to disclose them to its staff only if needed, and not to disclose them to any third parties without prior oral or written consent of the other Party. This obligation is valid also after the termination of this Agreement and of the Agreement 2017.

Article 8 – *Warranties*

8.1 The Parties make no warranty or representation, expressed or implied, with respect to the performance, merchantability, efficiency or fitness for a particular purpose (outside the scope of this Agreement) of the results generated during the execution of this Agreement.

8.2 When using data collected by the other Party or by a third party, the Parties make no warranty or representation, expressed or implied, that such data is correct, sufficient and complete.

Article 9 – *Liability*

9.1 Each Party shall bear its own loss and/or damage in connection with this Agreement. Parties shall be liable to each other only with regard to gross negligence, willful misconduct and damages caused with intent or negligence resulting in injury to life or persons.

9.2 No Party shall be liable to another Party for any indirect or consequential damages such as, but not limited to, loss of profit, loss of revenue or loss of contracts, except in the event that those damages result from willful acts.

Article 10 – *Force Majeure*

10.1 No Party shall be considered to be in breach of this Agreement if it is prevented from fulfilling its obligations under this Agreement by Force Majeure. Each Party will notify the other Parties of any Force Majeure without undue delay.

Article 11 – *Duration*

11.1 This Agreement shall enter into force on the date of the last Party's signature.

11.2 It shall remain in force until June 30, 2022, unless terminated earlier or further prolonged in accordance with its terms.

11.3 The Agreement may be extended for a longer time. This requires an amendment in a written form signed by all Parties.

Article 12 – *Breach and Termination*

12.1 Notwithstanding any other provision of this Agreement, either Party shall be entitled to terminate this Agreement on six months written notice to the other Parties. The termination of this Agreement, for whatever reason, shall not affect the rights of either of the Parties that may have accrued before the termination of the Agreement or which specifically or by their nature survives the termination of the Agreement.

12.2 A departing Party shall not be liable for any damages suffered by the other Parties in connection with this Agreement, regardless of the circumstances of such departure, except for fraud or willful misconduct.

12.3 Notwithstanding anything to the contrary in this Agreement, if a Party breaches any provision of this Agreement and fails to remedy such breach within 60 days of receipt of a notice from the aggrieved Party calling upon it to do so, then the aggrieved Party is entitled to cancel this Agreement with immediate effect. Any cancellation due to breach is without prejudice to any other rights of the aggrieved Party.

Article 13 – *Survival of Rights and Obligations*

13.1 The provisions relating to intellectual property, publications and confidentiality, for the time period mentioned therein, as well as for liability, applicable law and settlement of disputes shall survive the expiration or termination of this Agreement.

Article 14 – *Attachments, Inconsistencies and Severability*

14.1 This Agreement consists of its core text and:

- a) Appendix 1 - List of hardware, items, services and expenses
- b) Appendix 2 - Planned schedule with milestones
- c) Appendix 3 - Consolidated budget
- d) Appendix 4 - Organigram

14.2 In case of conflicts between the appendices and the core text of this Agreement, the latter shall prevail.

14.3 Should any provision of this Agreement become invalid, illegal or unenforceable, it shall not affect the validity of the remaining provisions of this Agreement. In such a case, the Parties

shall be entitled to request that a valid and practicable provision be negotiated that fulfils the purpose of the original provision.

Article 15 – Assignments

15.1 No rights or obligations of the Parties arising from this Agreement may be assigned or transferred, in whole or in part, to any third party without the other Parties' prior written approval.

Article 16 – Applicable Law and Settlement of Disputes

16.1 The provisions of this Agreement shall be interpreted in accordance with their true meaning and effect.

16.2 If any dispute, difference or controversy arises between the Parties in connection with this Agreement, the Parties will attempt to settle it amicably through negotiation.

16.3 Where, notwithstanding the efforts of the Parties, a dispute, difference or controversy cannot be resolved, the Parties concerned may submit the matter to arbitration in accordance with a procedure to be agreed by them. If no agreement is reached on the procedure within one month, the World Intellectual Property (WIPO) Expedited Arbitration Procedure shall apply. The place of arbitration shall be Brussels, Belgium. The language to be used in the arbitral proceedings shall be English.

Article 17 – Publication of the Agreement

17.1 The Parties expressly agree that the Agreement as a whole, including all Appendices and data on the Parties, subject-matter of the Agreement, the Consolidated Budget and the date of the Agreement conclusion, will be published in accordance with the Czech Act No. 340/2015 Coll. on special conditions for the effectiveness of some contracts, publication of these contracts and Contract Register, as amended (hereinafter the “CRA”). The Parties agree that FZU shall ensure the publication of the Contract in the Contract Register in accordance with CRA.

Article 18 – Amendments

18.1 With provision of Article 2.3, any change to this Agreement must be done in written form signed by all Parties.

Article 19 – Copies and Signatures


19.1 The present Agreement may be executed by an electronic signature system and such signatures shall constitute an original for all purposes.

For UNIGE
<hr/>
Prof. Brigitte Galliot Vice-Rector Email: [REDACTED]
Date: 8. 10. 2020
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Prof. Teresa Montaruli Professor and Principal Investigator Email: [REDACTED]
Date: 7. 10. 2020

For **IFJ PAN**

Prof. Dr. hab. Tadeusz Lesiak

Director General

Email: 

Date: 8. 10. 2020

For **FZU**

RNDr. Michael Prouza, PhD.
Director of Institute of Physics of the Czech Academy of Sciences
Email: [REDACTED]

Date: 7. 10. 2020

For **AI CAS**

Prof. Vladimir Karas
Director of Astronomical Institute of the Czech Academy of Sciences
Email: [REDACTED]

Date: 8. 10. 2020

Appendix 1 - List of hardware, items, services and expenses

1) IFJ PAN:

1. Telescope mechanical structure, drive system with firmware, control cabinet with cooling and auxiliary systems, docking station, cabling between components and cable carries, camera and telescope servers with software, safety system- quantity 2.
2. Drive control software.
3. Elements of the alignment and pointing systems.
4. Mirror actuators - 1 set.
5. Selected spare parts.
6. 12-m shipping containers with tooling for mechanical structure and other assemblies - quantity 2.
7. Funds and manpower for telescope shipment and assembly in the Ondřejov Observatory - quantity 2.
8. Software for camera electronics DigiCam, gateway and firmware for FPGA, calibration data for Cherenkov cameras.
9. Lightning protection air termination rods - quantity 2 sets.
10. Funds for site preparation (including foundations, excavation works and cabling for electrical and internet connection of the telescopes, fence, cabling, lightning protection, CCTV).
11. Manpower for supervision of the foundations construction and site preparation from the point of view of the current SST-1M Collaboration.
12. Documentation and manuals.
13. Manpower participating in telescope installation, commissioning.
14. Manpower for necessary maintenance and repairs beyond ordinary maintenance that can be performed by inexperienced manpower at the Ondřejov Observatory.
15. Manpower for *remote* operations of the telescopes.
16. Manpower for data analysis and dissemination of scientific results.
17. Funds for sharing of the operation costs.
18. Funds and manpower for telescope structure disassembly and shipment back to Poland in preparation for shipment to the final site.
19. Travel for meetings and coordination.

2) UNIGE:

1. Cherenkov cameras with cooling system cable sets - quantity 2.
2. Set of cooling pipes -quantity 2
3. camera chiller - quantity 1
4. Elements of the alignment and pointing systems - quantity 1.
5. Control software, calibration software, data analysis software.
6. Camera Testing System - quantity 1.
7. LED flasher - quantity 2.
8. Documentation and manuals.

9. Funds for first camera shipment to tests in Krakow and then for shipment for assembly in the Ondřejov Observatory.
10. Funds for second camera shipment to the Ondřejov Observatory.
11. Funds for insurance of cameras while operating in Ondřejov.
12. Manpower participating in telescope installation, commissioning.
13. Manpower for necessary maintenance and repairs beyond ordinary maintenance that can be performed by inexperienced manpower at the Ondřejov Observatory.
14. Manpower for *remote* operations of the telescopes.
15. Manpower for data analysis and dissemination of scientific results.
16. Travel for meetings and coordination.
17. Funds for shipping the cameras to the ultimate site or back to Geneva.

3) FZU:

1. Full set of mirrors with pads and transport boxes- quantity 2 sets.
2. All Sky Camera for clouds monitoring and coarse atmospheric extinction analysis.
3. Elements of mirror alignment and pointing systems.
4. Mirror actuators - 1 set.
5. Mirror alignment.
6. Funds for sharing the cost of site preparations (site investigation studies and associated administrative costs, planning).
7. Documentation and manuals.
8. Manpower participating in telescope installation, commissioning.
9. Manpower limited to necessary maintenance and repairs in the Ondřejov Observatory.
10. Manpower for *remote* operations of the telescopes.
11. Manpower for data analysis and dissemination of scientific results.
12. Manpower for coordination of the local administrative and engineering works towards construction of foundations and support infrastructure on site (link between current SST-1M Collaboration and Ondřejov Observatory).
13. Manpower for coordination of the site preparation.
14. Manpower ensuring contacts of the SST-1M Collaboration and the Ondřejov Observatory.
15. Manpower for coordination of the maintenance activities during telescope operation.
16. Funds for sharing of the operation costs (participation in the fair share of costs for power consumption and internet connection is foreseen).
17. Travel for meetings and coordination.

4) AI CAS:

1. Site for installation of the two telescopes at a distance between 100-200 m.
2. Manpower for local administrative and engineering support towards construction of foundations and support infrastructure.
3. Necessary local supervision of and manpower participating in the site preparation.
4. Manpower for necessary supervision of the telescope installation and commissioning in the Ondřejov Observatory.

5. Manpower necessary for support of on-site management.
6. Manpower for support during repair works in the Ondřejov Observatory.
7. Manpower participating in telescope installation and commissioning in the Ondřejov Observatory.
8. Manpower for maintenance and telescope safety of the telescopes during operation.
9. Manpower for *remote* operations of the telescopes.
10. Manpower for data analysis and dissemination of scientific results.
11. Provision of data from the weather stations.
12. Funds for sharing the cost of site preparations (investigation studies and associated administrative costs, planning).
13. Funds for sharing of the operation costs (participation in the fair share of costs for power consumption and internet connection is foreseen).

Appendix 2 - Schedule with milestones

1. Completion of the first telescope structure at IFJ PAN. Design and test of the first camera cooling system. Refurbishment of the first camera and its recalibration in the UNIGE lab. Assembly of the second camera at UNIGE. Preparation of the installation site in Ondřejov. Shipment of the camera to IFJ PAN, camera integration tests: by end of November 2020.
2. Shipment and installation of the first telescope with camera in the Ondřejov Observatory: December 2020.
3. Installation of the optical system elements (mirrors and actuators, mirror alignment, pointing calibration): Q1-2021.
4. Commissioning/Science operation of the first telescope in the Ondřejov Observatory - first in mono mode: Q1-2021 - Q2-2021 - and later in the stereo mode with second telescope: Q2-2021 - Q1-2022.
5. Completion of the second telescope structure: April 2021.
6. Shipment, installation, and commissioning of the second telescope with camera in the Ondřejov Observatory: Q2-2021.
7. Science operation of the mini-array in the Ondřejov Observatory (stereo mode) - Q2-2021 - Q1-2022.
8. Preparation for shipment to the final destination - Q2-2022.

Appendix 3 - Consolidated Budget*

	UNIGE	IFJ PAN	FZU	AI CAS	Total by type
<i>Scientific Equipment</i>	████████	████████	████████	████████	████████
<i>Man-power</i>	████████	████████	████████	████████	████████
<i>Travels</i>	████████	████████	████████	████████	████████
<i>Operation costs</i>	████████	████████	████████	████████	████████
<i>Shipment</i>	████████	████████	████████	████████	████████
<i>Site preparation</i>	████████	████████	████████	████████	████████
<i>Installation</i>	████████	████████	████████	████████	████████
Total	████████	████████	████████	████████	€5,562,066

*These costs are subject to some uncertainty related to currency fluctuations and final accounting values of the scientific equipment and other costs incurred. The cost of the items included in the Scientific equipment that are already built, includes both the investment cost and the value of manpower. The costs for UNIGE are converted from CHF to Euro according to the directive for H2020 Projects (1 Euro = 1.02 CHF). The costs for IFJ PAN assume the exchange rate 1 EUR = 4,4 PLN. The costs for FZU and AI CAS reflect an exchange rate of 1 EUR = 27 CZK. For the value of FZU scientific equipment the development of mirror production technology is not included, just the mass production cost is accounted for.

Appendix 4- Organigram

