

**Memorandum of Understanding
for the construction and the operation
of Large Size Telescopes
at the Roque de los Muchachos Observatory
on La Palma**

March 2020

Preamble

Whereas with the present generation of Cherenkov telescopes a window has been opened in the domain of very high-energy gamma-ray observations and the first detailed observations of the sky at TeV energies have revealed Galactic sources with complex and resolved structures as well as numerous extragalactic sources;

Whereas, the international Cherenkov Telescope Array North and South observatories, located in Spain and Chile, will provide the science community with a unique and innovative ground-based observatory.

Whereas, it is expected that most of the instrumentation required for CTA will be delivered as in-kind contributions to CTAO, which is responsible for construction and operating the array. CTA observatories will be formed of Large Size, Medium Size, and Small Size Telescopes.

Whereas, a group of institutes, known as the CTA LST Collaboration, intends to construct and do the commissioning of an ensemble of up to four Large Size Telescopes for the CTA North Observatory at the ORM Site on La Palma.

Whereas, IAC is hosting the LST prototype (LST1) at the ORM Site, as well as participating in the construction of the other three LSTs, which will also be located at the ORM Site.

Whereas, the Parties have signed a Memorandum of Understanding relating to the construction of LST1. The LST1 construction phase was aimed to begin in 2015 in La Palma, which was well before any official CTA site can become ready.

Whereas, the main goal of the early begin of the LST1 construction is to learn lessons from the process in order to successfully pass a production readiness review for construction of further CTA LST telescopes according to the global CTA construction plan.

Whereas, according to the present CTAO rules, the LST1 and the three additional LSTs are not part of CTA until the CTAO accepts them as in-kind contribution to CTA after an acceptance review.

Whereas, the Parties are involved in activities aiming at the implementation of the LST subsystem of the Cherenkov Telescope Array Observatory, as an in-kind contribution (IKC) to CTA.

Whereas, the Parties are committed to following the procedures as defined by the CTAO and set out in the CTAO Business Plan. In particular, activities described here are contingent on successful review processes within CTAO and, where appropriate, approval by CTAO.

NOW, THEREFORE, in consideration of the mutual covenants and agreements contained in this Memorandum of Understanding, and intending to be legally bound, the Parties signing at the end of this document agree as follows:

Definitions

Acceptance	means the moment when the ownership –or usership if legal ownership cannot be transferred- of the LSTs is transferred to CTAO.
Agreement	means this MoU and all Annexes, and the LST Management Plan.
Construction	means the phase of planning, design, construction, and erecting of the LSTs.
Commissioning	means the phase where the LSTs are tested and operated to verify that they fulfill the design specifications.
CTA	means Cherenkov Telescope Array.
CTAO	is the CTA Observatory, meaning the legal entity representing CTA, either the current CTAO gGmbH or any future legal entity that will be responsible for the construction and operation of CTA.
CTAC	is the CTA Consortium, meaning the Consortium that proposed and designed the CTA, and that should handle a substantial fraction of the observing time.
In-kind Contribution	means both the contribution by a shareholder / member to its legal entity as well as providing the telescope or subsystems to CTA as non-shareholder / member as long as the internal procedures of CTA have been followed.
LST	means Large Size Telescopes, each with a diameter of 23 m.
ORM	means the Roque de los Muchachos Observatory on La Palma, in the Canary Islands, Spain.
IAC	means “Instituto de Astrofísica de Canarias”, the host institution of ORM.
Parties	Legal Institutions and Funding Agencies signing this MoU.
LST members	Personnel recognized by the Parties as contributing significantly to this project.

Article 1 Scope

1.1 This Memorandum of Understanding (MoU) sets forth the conditions governing the scientific collaboration concerning the joint construction and commissioning of up to four (4) Large Size

Telescopes at ORM on La Palma with the goal to contribute these LSTs to the CTA project and the operation of these four (4) LSTs until the acceptance by CTAO.

- 1.2 This MoU covers the transition phase starting with the construction of the LSTs by the Parties and ending with the acceptance of the LSTs by CTAO.
- 1.3 Nothing in this MoU shall be regarded as creating a partnership, agency, employment relationship, or taxable entity between the parties.
- 1.4 The responsibilities of the activities carried out under this MoU are specified in Art. 2 and Annex 1 of this MoU.
- 1.5 Neither Party shall have the right, power or authority to create any obligations or duties, expressed or implied, on behalf of the other Party, it being understood that the Parties are independent vis-à-vis one another.
- 1.6 This MoU supersedes the MoU concerning the construction of the LST1.
- 1.7 The Parties of this Agreement acknowledge the mutual commitments between the Institute for Cosmic Ray Research of the University of Tokyo and the Instituto de Astrofísica de Canarias signed in the document "Agreement between the Institute for Cosmic Ray Research of the University of Tokyo and the Instituto de Astrofísica de Canarias on the installation and the operation and the operation of four 23 m Cherenkov Telescopes at the Roque de los Muchachos Observatory".

Art. 2 Responsibilities and Activities

- 2.1 The Parties agree to jointly construct and commission up to four (4) LSTs. The technical characteristics of the telescopes correspond to the design carried out by the Parties. The Parties might also install some auxiliary devices necessary to test and operate the LSTs.
- 2.2 The construction and installation of the LSTs following the construction of LST1 should only start after the successful completion of the Critical Design Review of the LST Project (see Art. 11).
- 2.3 For the construction of each LST, the Parties shall agree upon the assignment of tasks to each Party in writing (Annex 1). Each Party will ensure its compliance with local laws and regulations, e.g. obtaining the relevant permits for their part of the construction of the LSTs on the ORM Site.
- 2.4 Notwithstanding the joint responsibility to the LST project, each Party shall be responsible alone internally for preparing that part of the project that correspond to its tasks and responsibilities.
- 2.5 Each Party has the right to employ contractors or subcontractors for its part; this does not change their full responsibility for the performance of any of its works.
- 2.6 The Parties are jointly responsible for the maintenance of the LSTs during the construction and commissioning phases and until the telescopes are accepted by CTAO as in-kind contributions.
- 2.7 Before the acceptance by CTAO the Parties may need to take commissioning and operation shifts at the telescope site. The number of shifts that are assigned to each Party will be in relation to its number of LST members.
- 2.8 The Parties will undertake every reasonable effort to seek the acceptance of the LSTs by CTAO.
- 2.9 The Parties shall provide twice per year an updated list of the LST members

Art. 3 Funding and Financial Contribution

- 3.1 Each Party shall be responsible for procuring its own funding and paying its own costs incurred in the respect of the construction and commissioning of the LSTs.
- 3.2 At the end of each calendar year, the Parties will account and report their incurred costs during the year following the guidelines in the Annex 2.
- 3.3 The Parties shall set up an Administrative Common Fund to cover the operation expenses for the construction and commissioning of the telescopes until they are accepted by CTAO.
- 3.4 The Administrative Common Fund is divided in two budgets:
 - i) A budget for the commissioning, operation and maintenance of LST1. Each Party will contribute to this budget in relation to the number of LST members declared.
 - ii) A budget for the commissioning and maintenance of LST2-4. Each Party will contribute to this budget in relation to their construction investment in the LST2-4 project. Being Spain the host country, which provides the infrastructure for the CTA-North observatory, the Spanish Parties shall be exempt from this second budget.
- 3.5 The Administrative Common Fund is managed in accordance with the agreed upon guidelines (see Annex 3).
- 3.6 In case one of the Parties is not able to provide the necessary funding in one year or for the remaining duration of the Agreement, this Party will inform the other Parties on necessary modifications and the Parties will jointly discuss further appropriate steps.

Art. 4 LST Site at ORM coordination of the construction and safety measures

- 4.1 The Parties will apply the ORM Health and Safety Standards on the ORM Site. The Parties shall ensure that the persons authorized to construct and maintain the LSTs are familiar with and respect the ORM Health and Safety requirements.
- 4.2 The Parties will coordinate scientific and administrative matters concerning the construction and commissioning of the LSTs through a Steering Committee. The governance details are described in the accompanied Management Plan .

Art. 5 Ownership, Import / Export

- 5.1 The Parties will remain owner of their respective equipment installed at ORM until the telescopes are accepted as in-kind contributions by CTAO and legal ownership can be transferred to CTAO. The same applies to other materials and goods stored by the Parties at ORM and elsewhere in the Canary Islands.
- 5.2 Equipment and parts of it, materials and goods can be acquired, imported and exported under the tax exemption rules applicable to astronomical equipment on the Canary Islands. CTAO shall provide support and assistance with procurement issues in order to ensure that the tax exemption rules apply.
- 5.3 In particular, under the terms of Article 12 of the ORM International Treaty, Spain authorizes the import and re-export, free of Customs Duty and other taxes levied, of the Equipment and parts of it, materials and goods, including accessories, spare parts and instruments, whatever their origin or from whatever country they come, which are considered necessary for the construction and operation. Such Equipment, materials and goods shall be exempt from taxation while in Spain.

Art. 6 Background Intellectual Property and Work results

- 6.1 **“Background Intellectual Property”** within the meaning of this Agreement is any intellectual property owned or controlled by either of the Parties prior to commencement of or developed independently from the activities under this Agreement, and which the owning Party contributes or uses in the course of performing the activities under this Agreement, in particular construction plans.
- 6.2 All Background Intellectual Property used in connection with the activities under this Agreement shall remain the property of the Party introducing the same. Each Party acknowledges and confirms that nothing contained in this Agreement shall give it any right, title or interest in or to the Background Intellectual Property of the other Party save as explicitly granted by this Agreement.
- 6.3 **“Work results”** within the meaning of this Agreement shall mean any results, whether fit for protective rights or not, generated under this Agreement.
- 6.4 Any Work Results generated solely by employees of one Party shall solely belong to this Party. Jointly generated Work Results shall jointly belong to the Parties whose employees generated them. Their share in the jointly generated Work Results shall be determined in accordance with the significance of the contribution to the jointly generated Work Result. Neither Party may assign any of its rights in the jointly generated Work Result without the prior consent of the other Party, regardless of the name under which a protective right is registered. Should either Party wish to abandon its share in a jointly generated Work Result, it shall first offer such right to the other Party.

Art. 7 Right of Use

- 7.1 For the duration of this Agreement the Parties grant each other a no-charge, non-transferable, non-sublicensable and non-exclusive right to use their Background Intellectual Property if and to the extent to which this is necessary for the successful performance of the activities under this Agreement and subject to any legal restrictions or limits, including those imposed by the rights of third parties.
- 7.2 For the duration of this Agreement the Parties grant each other a no-charge, non-transferable, non-sublicensable and non-exclusive right of use in their respective Work Results and in their share in jointly owned Work Results if and to the extent to which this is necessary for the successful performance of the activities under this Agreement.
- 7.3 The Parties shall be entitled to use the Work Results developed under this Agreement at no charge and in an unrestricted manner for noncommercial scientific research and teaching purposes. For any further desired use of the Work Results, the Parties shall enter into a separate agreement.

Art. 8 Data rights and Publications

- 8.1 The Parties agree to share all data acquired with the LSTs among the LST members.
- 8.2 For results that are to be presented in public, CTAC data publication rules will apply.

8.3 The schedule of any observations remains confidential among the LST members.

8.4 LST members have the right of signing publications using LST data. In the case of purely technical publications the author list is expected to be limited to persons contributing to the work

8.5 Publications containing non-public data from other CTA projects and other instruments and telescope projects will have a combined author list (fully alphabetic, or the list of the less relevant party appended) to be agreed by both parties. s

Art. 9 Warranties

Any information or materials (including results and background) supplied by one of the Parties to any other Party in the performance of the agreement as provided “as is”, without any warantee or representation of any kind whatsoever.

Art. 10 Liability

10.1 Notwithstanding Spanish regulations concerning liability and to the extent legally possible, the Parties agree on the following internal restriction for liability.

10.2 Liability for damages shall be limited to only such damages caused by intentional wrongful acts or the gross negligence of either Party.

10.3 Neither Party shall be liable for indirect or consequential damages, except for damages resulting from intentional wrongful acts or gross negligence.

10.4 The limitation of liability and/or exemption from liability provided for in section 10.2 through 10.3 shall not apply in the event of injury to life, body, or health.

Art. 11 Interaction with CTA

11.1 The Parties agree that the LSTs shall be part of the CTA project. To ensure their compliance with the CTA requirements, each telescope has to complete reviews by CTAO, e.g., Critical Design Review.

11.2 The Parties will undertake every reasonable efforts to seek the acceptance by CTAO.

11.3 The Parties will ensure that when CTA recognizes the LST as part of the CTA project, the investment by all Parties will be recognized according to the internal procedures of CTA.

11.4 If one of the LSTs fails the acceptance by CTAO and the cause can be determined (deficiency or non-compliance), a jointly acceptable solution should be found. Any additional costs will be borne by the Party responsible for the deficiency or non-compliance.

Art. 12 Confidentiality

12.1 The Parties acknowledge that, prior to and during the term of this Agreement, the Parties may disclose to one another scientific, technical, trade secret, business, or other information (hereinafter referred to as “Confidential Information”). They agree that in order to ensure that each Party understands which information is deemed to be confidential, all Confidential

Information relating to the Project will be in written form and clearly marked as “Confidential,” and if the Confidential Information is initially disclosed in oral or some other non-written form, it will be confirmed and summarized in writing and clearly marked as “Confidential” within ten (10) days of disclosure. The receiving Party shall hold such Confidential Information in confidence and shall treat such information in the same manner as it treats its own Confidential Information but not less than with a reasonable degree of care. The Confidential Information provided to the receiving Party will remain the property of the disclosing member, and will be disclosed only to those persons necessary for the performance of this Agreement.

12.2 The obligation of the receiving Party to maintain confidentiality under this Agreement will survive its expiration or termination and will endure for five (5) years from the date of disclosure.

12.3 Confidential Information shall not include information that:

- i. is already known to the receiving Party prior to the effective date, as evidenced by the receiving Party’s records;
- ii. becomes publicly known without any wrongful act or breach of this Agreement by the receiving Party;
- iii. has been or is disclosed to the receiving Party by a third party who was not, or is not, under any obligation of confidence or secrecy to the disclosing member at the time said third party discloses to the receiving Party, or has the legal right to do so;
- iv. is developed independently by employees of the receiving Party who had no access to or knowledge of the Confidential Information, as evidenced by the receiving Party’s records;
- v. is approved for release by written authorization of the disclosing Party;
- vi. is required to be disclosed by law or governmental regulation or by court or administrative order, provided the receiving Party promptly notifies the disclosing Party as soon as reasonably practical or possible of receipt of the request, and takes reasonable and lawful actions to avoid and/or minimize the extent of such disclosure if requested by the disclosing Party, at the disclosing Party’s sole cost and expense.

Art. 13 Duration of this Agreement

This Agreement becomes effective with the signatures of all Parties and stays in effect for five (5) years, although can be renewed until all the LSTs for CTA-North have been accepted by CTAO. In the event that the LSTs will not be accepted by CTAO, the Parties will conclude a new agreement that regulates the rights and obligations of each Party concerning the operation of the LSTs.

Art. 14 Amendments

This Agreement may be amended upon mutual consent of the Parties. Any amendments shall be in writing; this shall also apply to a change of the written form requirement itself.

Art. 15 Disputes

15.1 In case of disputes or difference of opinion between the Parties arising out of or in connection with this Agreement, the Parties shall enter into negotiations in good faith with the aim of settling the dispute or difference in opinion amicably.

15.2 If the Parties fail to reach an amicable settlement, any dispute, claim or controversy arising out of or in connection with this Agreement is subject to the exclusive jurisdiction of the court at the defendant's domicile.

Art. 16 Miscellaneous

16.1 Oral ancillary agreements between the Parties do not exist. The relationship between the Parties with respect to the scope of this Agreement is regulated in full by this Agreement.

16.2 Annex 1 and Annex 2 to this Agreement shall form an integral part of this Agreement.

16.3 If any provision of this Agreement is found to be, or becomes, unenforceable, invalid or void in any respect, this shall not affect the validity of any other provision of this Agreement and all other provisions of this Agreement shall nevertheless be carried into effect. The parties agree to amend this Agreement to modify any such provisions found to be unenforceable, invalid or void so as to give effect to the intentions of the parties to the fullest extent possible in a manner which is valid and enforceable.

Erratum (Approved by the LST Steering Committee in April 29th 2021)

- In Article 3.5, “(see Annex 3)” should read “(see Annex 2)”