AGREEMENT ABOUT A COLLABORATION

ON CALIBRATION AND ENVIRONMENTAL MONITORING

FOR PREPARING THE IMPLEMENTATION OF THE

CHERENKOV TELESCOPE ARRY OBSERVATORY

BETWEEN

The **Cherenkov Telescope Array Observatory gemeinnützige GmbH,** a German limited liability company having its registered offices at Saupfercheckweg 1, 69117 Heidelberg, Federal Republic of Germany, represented by its Managing Director Prof. Federico Ferrini,

hereinafter referred to as «**CTAO**»,

AND

The Institut d'Estudis Espacials de Catalunya, having its registered offices at c/Gran Capità 2-4, Edifici Nexus, despatx 201, 08034 Barcelona, Spain, represented by its Director Dr. Ignasi Ribas Canudas and its Manager Sra. Pilar Montes Marbà by virtue of the faculties assigned by the deed number 2.109 granted by Pedro Casado Martín, notary in Barcelona, on September 29, 2017,

hereinafter referred to as «**the Collaboration Partner or IEEC**»,

Hereinafter individually referred to as «**the Party**» and collectively referred to as «**the Parties**»,

CONSIDERING THAT:

- CTAO is a limited liability company for not-for-profit purposes established in 2014 in order to design and prepare the implementation of the Cherenkov Telescope Array Observatory (CTA), the largest ground-based gamma ray observatory in the world operating in the energy range extending from some tens of GeV to about 300 TeV. CTA will consist of two arrays at two different sites, one in the northern and one in the southern hemisphere;
- CTAO is an interim legal entity and that the CTAO ERIC (European Research Infrastructure Consortium) is in the process of being set up for the construction and operation of the CTA;
- IEEC is a Research Institute with specific professional expertise in CTA Calibration and Environmental Monitoring;
- CTAO encourages scientific and technical collaborations with research institutes - shareholders of CTAO or others - with a view to achieving the goal to construct and operate the CTA and to promote Research and Science in the field of gamma ray astronomy;
- CTAO gGmbH and the Collaboration Partner have a mutual interest in carrying out joint Research and Development Activities in the field of CTA Calibration and Environmental Monitoring System with a view to preparing the implementation of the CTA and that they intend to establish a collaboration for the purpose identified below;

NOW THEREFORE THE PARTIES HAVE AGREED AS FOLLOWS:

ARTICLE 1 – PURPOSE OF THE COLLABORATION AGREEMENT

The purpose of this Collaboration Agreement (hereinafter referred to as "the Agreement") is to establish and carry out a Research and Development Collaboration for preparing the implementation of the Cherenkov Telescope Array Observatory. The Parties agree to support each other in reaching their respective R&D goals in connection with CTA, especially by providing support from highly qualified personnel.

No employee-employer relationship between the Parties is created and no association is established as a result of this Agreement.

ARTICLE 2 – REALISATION OF THE JOINT R&D ACTIVITIES

The Parties will carry out their joint R&D Activities as described in Annex 1 detailing their reciprocal responsibilities.

The Collaboration Partner will in particular provide Dr. Markus Gaug (hereinafter referred to as "the expert") for the cooperative work at the equivalent of 50% of his working time. The expert will provide activity reports on a regular basis.

The expert at all time remains under the authority of the Collaboration Partner; this particularly regards working hours, place of work or methods of performing his/her activities. The Collaboration Partner remains responsible for covering any social security matters in respect of the expert.

Should the expert have to perform part of the works at CTAO's premises, CTAO will provide necessary office space and communication equipment. The expert shall comply with any and all applicable safety regulations.

ARTICLE 3 – FURTHER CONTRIBUTIONS OF THE PARTIES

3.1 Financial Contribution

The Collaboration Partner receives a cost contribution for the duration of this Agreement in the amount of EUR 41.770.00 (forty one thousand seven hundred and seventy Euro); the contribution shall be used by the Collaboration Partner in coordination with CTAO to finance necessary personnel for the joint R&D activities. In case of an early termination the amount of the cost contribution will be reduced accordingly.

The cost of travel expenses including per diem compensation incurred by the expert will be borne by CTAO within the limits of German Bundesreisekostengesetz (BRKG) which are mandatory for CTAO. The booking of flights and accommodations related to the work of the expert will be done directly by CTAO. CTAO will indicate to the Collaboration Partner the amounts that can be reimbursed to the expert following the BRKG. The amounts reimbursed to the expert by the Collaboration Partner will then be included in the invoice addressed to CTAO.

3.2 Terms of Payment

CTAO gGmbH will reimburse to the Collaboration Partner on its account

Bank: BBVA

IBAN :

BIC : BBVAESMM

the cost contribution stipulated in Art. 3.1 within 30 (thirty) days after the end of the month of receipt by CTAO of a corresponding invoice issued according to the following schedule:

EUR 6,961.67 every two months, i. e. 6 bi-monthly payments (for March, May, July, September, November 2020 and January 2021).

The cost contribution shall not be subject to VAT at the time of the invoice (exemption from VAT).

ARTICLE 4 – POINTS OF CONTACT

The points of contacts for the implementation of the Agreement shall be:

For Administrative and invoicing matters:

at CTAO: Nadia Defrancesco

Nadia.defrancesco@cta-observatory.org

Invoicing data are:

Cherenkov Telescope Array Observatory gGmbH, Saupfercheckweg 1,
69117 Heidelberg, Germany, VAT ID: 296943397, Tax No 32489/21615

at IEEC: Anna Bertolin

anna@ieec.cat

For technical matters:

at CTAO Dr. Nick Whyborn

e-mail: nick.whyborn@cta-observatory.org

at IEEC Dr. Markus Gaug

e-mail: gaug@ieec.cat

ARTICLE 5 – CONFIDENTIALITY, PUBLICATIONS

5.1 – Confidentiality

Each Party shall treat as confidential any information provided by the other Party which is designated as confidential or of which its confidential character should reasonably be understood. Except as agreed otherwise in writing, this confidentiality obligation shall continue for a period of five (5) years from the date of termination of this Agreement. The receiving Participant shall not use such information for any purpose other than the execution of this Agreement and shall not disclose it to any third party without prior written consent of the disclosing Party.

No confidentiality obligation shall apply to information

- which the receiving Party demonstrates was in the public domain prior to its communication by the disclosing Party;
- became part of the public domain after such communication but not through any fault of the receiving Party;
- was already in possession of the receiving Party at the time of signature of this Agreement;
- has been lawfully received by the receiving Party from a third party without any confidentiality obligation imposed or
- has been developed by the receiving Participant independently and outside the scope of this Agreement.

5.2. Publications

Each publication or communication from CTAO about results of the present Agreement, including social media, shall be discussed with the other Party prior to that publication/communication being made.

ARTICLE 6 - OWNERSHIP OF RESULTS

6.1. Previous Results

The results obtained by the Parties prior to the R&D Activity shall remain their respective property.

The results, even those relating to the purpose of the R&D Activity but not directly derived from the work conducted under the Agreement, shall belong to the Party which obtained such results. The other Party shall not, by virtue of this Agreement, be entitled to any rights concerning such results (patents, corresponding know-how, etc.).

6.2. New results

New results jointly developed under this Agreement shall be owned by both Parties and may be used by them for non-commercial own uses. Patenting and licensing of jointly owned results shall be possible, but subject to separate case by case agreements.

New results developed under this agreement by one Party individually shall be owned by that Party. Each Party shall grant to the other Party, free of charge, a non-exclusive royalty-free worldwide license to use such results for the duration of the Agreement and as required for the purposes of this Agreement by such other Party, excluding the right to sub-license to third parties.

Should any right of one Party to use the new results be required by the other Party for any other purpose, the Parties shall negotiate on a fair and reasonable basis the terms of the license of the corresponding results.

ARTICLE 7 – DURATION AND TERMINATION

This Agreement including its Annex 1 **will take effect from 1 March 2020 and will terminate on 28 February 2021**; it may be renewed by means of a written amendment signed by both parties specifying particularly the purpose of the extension and the terms and conditions of its financing.

This Agreement may be terminated by either Party upon 90 (ninety) days written notice.

Notwithstanding the expiration or early termination of the Agreement

- the provisions of "Article 5 - Confidentiality, Publications" shall remain in effect;

- except where otherwise stipulated, also the provisions of "Article 6 - Ownership of Results" shall remain in effect.

ARTICLE 8 – DISPUTE RESOLUTION

In the event of any dispute or difference arising out of the interpretation, implementation or application of the provisions of the Agreement, a Party shall address to the other Party a registered letter explaining the reasons of the dispute. The Parties hereby undertake to settle it amicably through negotiations that may result in an appropriate amendment of the Agreement.

If no amicable solution is reached within a period of 30 (thirty) days, the dispute shall be brought to the attention of the Council of CTAO gGmbH.

In the event of a persistent dispute, it shall be submitted to the competent Court of Heidelberg.

ARTICLE 9 – NO ASSIGNMENT

No Party is authorized to transfer to a third party all or part of the rights or obligations hereunder without the prior written agreement of the other Party.

The Parties agree that any rights and obligations borne by this Agreement may be transferred to the CTAO ERIC; IEEC gives its prior consent to this assignment.

ARTICLE 10 – AMENDMENTS, ANNEXES

This Agreement may be amended by written agreement signed by both Parties. Annexes are integral part of this Agreement.

ARTICLE 11 – SEVERABILITY CLAUSE

Should one or several provisions of the Agreement be considered or declared invalid on the grounds of a treaty, a law or a regulation, or as a consequence of a final decision by a competent jurisdiction, the other provisions will retain all their force and scope. The Parties will then and without delay bring in the appropriate amendments, albeit maintaining as much as possible the requirements of the goodwill agreement existing at the time of signature of the Agreement.

Signed in two (2) original copies:

Date:	Date:	Date:
CTAO	IEEC	IEEC
Managing Director	Director	Manager
Prof. Federico Ferrini	Dr. Ignasi Ribas Canudas	Sra. Pilar Montes Marbà

Annex 1

CTA is the flagship project of ground-based gamma-ray astronomy. The construction of CTA is a major scientific effort supported by about 1300 researchers from more than 30 countries. The CTAO ERIC is about to be set up; it will start the construction phase of CTA.

The following R&D Activities shall be jointly carried out with a view to achieving the goals outlined below:

A) CTA Calibration and Environmental Monitoring

Goal A1): Definition and Documentation of requirements, verification and validation concepts

Goal A2): Definition of work packages and management plans

To address goals A1) and A2) Dr. Markus Gaug

- will assist to regular systems engineering meeting of CTAO
- regularly contact the array and atmospheric calibration system and software developers of CTAO
- plan and participate in joint workshops
- regularly contact the CTAO infrastructure team and
- the IAC project office

B) Provide support to science and observatory operation concepts

Goal B1): Editing a detailed calibration plan

To address goal B1) Dr. Markus Gaug

- will cooperate with the project scientist and the CTAO Systems Engineering team
- participate in joint workshops