Memorandum of Understanding

for the

FASER Collaboration

between

The EUROPEAN ORGANIZATION FOR NUCLEAR RESEARCH, “CERN”, an Intergovernmental Organization having its seat at Geneva, Switzerland, as Host Laboratory

on the one hand,

and

the Collaborating Institutions of the FASER Collaboration

on the other hand.
WHEREAS

A group of institutes from CERN Member and non-Member States, and CERN, ("the Collaborating Institutions"), listed in Annex 1, have proposed to CERN to carry out a dedicated experiment ("Experiment") searching for new long-lived, weakly-interacting neutral particles, extending the exploratory potential of the LHC. For this purpose, it has been agreed to form the “Forward Search Experiment at the LHC” (FASER) Collaboration ("the Collaboration"). The Collaborating Institutions have secured the support of their Funding Agencies, wherever appropriate, to enable them to participate in the Collaboration;

On the basis of a Letter of Intent submitted in July 2018 (CERN-LHCC-2018-030), a Technical Proposal submitted in November 2018 (CERN-LHCC-2018-036) and a detailed review of the scientific merits of the Experiment, the technological feasibility and estimates of the resources needed, the LHC Experiments Committee ("LHCC") has recommended approval of the Proposal to the CERN Research Board;

In its session on 5 March 2019 the CERN Research Board approved the Experiment (Minutes of the Research Board held on 5 March 2019).

The execution of the Experiment is subject to the General Conditions applicable to Experiments at CERN ("the General Conditions"). The General Conditions define the representation of the parties involved in the Experiment and the basic documents that govern its execution, and set out in general terms the organisation of the Collaboration, CERN’s obligations as Host Laboratory and the obligations of the Collaborating Institutions. They also address the questions of liability and dispute resolution, as well as matters related to intellectual property. The General Conditions are an integral part of the MoU and the current version, dated 20 February 2008, is attached as Annex 7;

As provided in the General Conditions, agreement on the responsibilities for the execution of the Experiment is effected through identical Memoranda of Understanding ("MoU") between CERN as the Host Laboratory and each Collaborating Institution (including CERN), represented for the purpose of signature, as the case may be, by their Funding Agencies;

IT IS HEREWITH UNDERSTOOD AS FOLLOWS:

Article 1. Parties to the MoU

1.1 The parties to the MoU are CERN as Host Laboratory, and the Collaborating Institutions listed in Annex 1 ("the Parties"). Annex 2 lists the Funding Agencies of the Collaboration. A Funding Agency may be a Collaborating Institution or a body acting on behalf of one or more Collaborating Institutions in the conclusion of the MoU.

1.2 The admission of new Collaborating Institutions is subject to approval by the Collaboration Board (CB), and such newly admitted Collaborating Institutions shall sign this MoU in accordance with Article 12.
Article 2. Purpose of the MoU

This MoU:

2.1 Defines the common Research Programme of the Collaboration, which is subject to the ongoing scientific review of the LHCC.

2.2 Defines the mechanisms by which the charges and responsibilities for the execution of the Research Programme are distributed amongst the Parties.

2.3 Sets out organizational, managerial, financial guidelines and publication policies to be followed by the Collaboration.

2.4 Defines the use of common infrastructure.

2.5 Defines the Collaboration Common Fund (CCF) account.

Article 3. CERN's Obligations as Host Laboratory

3.1 CERN’s general obligations as Host Laboratory are set out in the General Conditions.

3.2 In addition to its general obligations as Host Laboratory and subject to the provisions in this MoU, CERN shall be responsible for facilitating the installation of the Experiment as set out in Annex 5.

3.3 As a Collaborating Institution CERN is subject to the responsibilities described in Article 4.

Article 4. Responsibilities of the Collaborating Institutions

The Collaborating Institutions shall, subject to the provisions in this MoU:

4.1 Make a substantial contribution to the Research Programme, taking clear commitments, which are set out in Addenda to this MoU;

4.2 Nominate a Collaborating Institution Representative (IR) to represent the Collaborating Institution in the Collaboration and Collaboration Board, who will be responsible for the activity of the Collaborating Institution and its team members in the Collaboration;

4.3 Ensure that all team members of the Collaborating Institutions working on the Experiment are registered in the CERN Greybook.

4.4 Ensure that appropriate arrangements are agreed for the making available of the required ATLAS spare SCT modules and LHCb spare calorimeter modules to the Collaboration.

Article 5. Ownership

5.1 In application of Article 6.9 of the General Conditions, and notwithstanding any other provisions of the MoU (including the General Conditions), except as stipulated otherwise below, ownership of Equipment supplied for the Experiment shall transfer to CERN upon (i) the completion of its use for the Experiment, or (ii) the issue of a declaration that the Experiment has been completed, whichever is earlier.
5.2 Responsibility for the dismantling of the Equipment shall remain the responsibility of the Collaborating Institutions (with standard support by CERN), which they shall carry out at the Collaboration’s expense, typically paid from the CCF.

5.3 Without prejudice to this responsibility, upon transfer of ownership of the Equipment, responsibility for (i) transport and (ii) safe disposal, shall lie with CERN, which, at its expense, shall perform these activities in accordance with applicable rules and regulations. For the purpose of this provision, at the point in time at which ownership of the Equipment transfers to CERN, it shall be deemed to have no residual monetary or other value.

5.4 Notwithstanding any of the foregoing, the Collaborating Institutions agree that further to a written notification by the University of California ("UCI") to CERN and to the Collaboration as a whole, prior to the completion of the Equipment’s use for the Experiment or the issue of a declaration that the Experiment has been completed, whichever is earlier, ownership of specific parts or all of the Equipment shall not transfer to CERN.

5.5 In such instances, upon the earlier of the completion of the Equipment’s use for the Experiment or the issue of a declaration that the Experiment has been completed, ownership of the Equipment concerned shall transfer to UCI, which shall then, at its expense, promptly ensure (i) the dismantling of the concerned Equipment (with standard support by CERN), (ii) their transport and (iii) safe disposal, each in accordance with applicable rules and regulations.

5.6 Notwithstanding any other provisions of the MoU, including the General Conditions, this provision is binding.

Article 6. Structure of the Collaboration

6.1 The bodies responsible for the management of the Collaboration are the Collaboration Board, the Spokesperson or Co-Spokespersons, as the case may be, and the CERN contact person.

6.2 Collaboration Board

6.2.1 The Collaboration Board is the highest decision-making body. Each Collaborating Institution has one vote.

6.2.2 The Collaboration Board defines and reviews the Research Programme of the Collaboration and the corresponding Financial Plan. It approves the annual budget and annual financial report.

6.2.3 The Collaboration Board decides on the membership of new institutes in the Collaboration. It appoints at least one Spokesperson and no more than two Co-Spokespersons and the CERN contact person from within the members of the Collaboration.

6.3 Spokesperson or Co-Spokespersons

6.3.1 The Collaboration Board elects at least one Spokesperson and no more than two Co-Spokespersons from the Collaborating Institutions.

6.3.2 The Spokesperson or the Co-Spokespersons, as the case may be, is/are responsible for officially representing the Collaboration and for liaising with the relevant CERN management and the LHCC or other relevant bodies.
6.3.3 The Spokesperson or Co-Spokespersons, as the case may be, execute(s) the decisions taken by the CB and ensure(s) the co-ordination within the Collaboration.

6.4 Details on tasks and procedures of the Collaboration bodies responsible for its management are described in Annex 3; the names of persons holding these positions at the time of signature are listed in Annex 4.

Article 7. Collaboration Common Fund (CCF)

7.1 The CCF is set up to fund the activities of the Collaboration including the construction, the operation and the maintenance of the Experiment.

7.2 The CCF will be opened in the name of the Collaboration at CERN ("CCF Account"). All payments made by CERN on behalf of the Collaboration and the related receipts will be shown in the CCF Account.

7.3 The Collaborating Institutions shall contribute to the Collaboration financially or in-kind, as outlined in the Structure of the Experiment and responsibilities of the Collaborating Institutions in Annex 5 the Financial Plan in Annex 6.

7.4 Subject to Article 11.2, UCI provides funds required for the initial construction, and to cover a part of the maintenance and operation cost of the Experiment to the CCF.

7.5 The Collaborating Institutions shall transfer any financial contributions into the CCF, before expenses are incurred and payments are made on behalf of the Collaboration. For the avoidance of doubt, if, in exceptional circumstances, such expenses are incurred or payments are made prior to the necessary transfers, the Collaborating Institutes shall promptly transfer the outstanding amounts into the CCF Account.

7.6 The Spokesperson or Co-Spokespersons, as the case may be, prepare(s) and propose(s) the annual budget, which is submitted to the CB for endorsement.

7.7 The CB decides on the approval of the annual financial report.

Article 8. Theses, Publications and Conference Contributions

8.1 One copy of any Ph.D. thesis or similar academic document relating to the Research Programme must be sent by the Collaborating Institution(s) concerned to the CERN Library for inclusion in its collection.

8.2 The results of the research work of the Collaboration can be published in the following forms:

- Regular status reports requested by the LHCC. All team members of the Collaborating Institutions are authors. The members of the Collaboration Board maintain the list of authors from their Collaborating Institution.

- Publications in scientific journals covering the Research Programme of the Collaboration. All team members of the Collaborating Institutions are authors. Where author lists are subject to a length limitation, it is permissible to use, as authors list, the name of the author only, along with the statement "On behalf of the FASER Collaboration" and a footnote indicating the web page where the complete authors list is given.
- Internal FASER notes.

8.3 The review of part or all the results of the research work of the Collaboration can be presented at workshops and conferences as:

- Contributed talks. The speaker discusses the abstract with the Spokesperson or Co-Spokespersons, as the case may be. Written proceedings are treated as normal publication (see above).

- Invited talks. In the case that the invitation is received by the Collaboration, the choice of the speaker is the responsibility of the Spokesperson or Co-Spokespersons, as the case may be. Written proceedings are treated as normal publication (see above).

Where presentations are subject to a length limitation, it is permissable to use, as authors list, the name of the speaker only, along with the statement “On behalf of the FASER Collaboration” and a footnote indicating the web page where the complete authors list is given.

7.4 All publications and conference contributions must carry the remark “This work was supported by grants from the Heising-Simons Foundation (Grant No. 2018-1135, and Grant No. 2019-1179) and the Simons Foundation (Grant No. 623683)."

Article 9. Observance of the MoU and the General Conditions

Save for Article 5 and the provisions of the General Conditions, the MoU is not legally binding, but the Parties recognise that the success of the Collaboration depends upon their adherence to its provisions. Any default under its provisions shall be dealt with by the Collaboration in consultation with the CERN Management.

For the avoidance of doubt, in case of contradiction or ambiguity, the General Conditions shall prevail over the main body of this MoU.

Article 10. Duration of the MoU and its Extension

10.1 This MoU is effective from the date of the Parties’ signature. It shall be deemed to cover any activity in the initial period of the Experiment from 3 March 2019 until 31 December 2025.

10.2 The MoU may be extended at any time by mutual agreement of the Parties subject to the approval by the CERN Research Board.

Article 11. Withdrawal of Funding Agencies or Collaborating Institutions

11.1 Any Collaborating Institution may withdraw from the Collaboration by giving at least six months’ notice in writing to the Collaboration Board Chair and the Spokesperson or Co-Spokespersons, as the case may be. In such an event, the Collaborating Institution shall, in accordance with the General Conditions, settle its outstanding commitments under the MoU and its engagements taken within the Collaboration prior to the effective date of its withdrawal.

11.2 In case that UCI does not obtain the required funds or withdraws from the Collaboration, the Collaboration Board and the CERN Management will enter into consultations concerning the continuation or termination of the Experiment. Where such consultations do not establish a
viable basis for a continuation of the Experiment, Article 8.2 of the General Conditions shall apply *mutatis mutandis*.

**Article 12. Participation of additional institutes**

Subject to the agreement of the Parties, additional institutes may join the Collaboration at any time during the lifetime of the MoU. Each such event shall give rise to an Addendum to the MoU setting out the specific terms of collaboration for the institute(s) concerned and with explicit mention that the terms of the MoU (including all existing Addenda and Amendments) apply. The terms of collaboration shall be negotiated by the Collaboration (which reserves the right to request additional contributions from such institutes). The Addendum shall be signed by CERN as Host Laboratory, by the Spokesperson or Co-Spokespersons, as the case may be, as representative(s) of the Collaboration, and by the institute(s), for the purposes of signature represented, as the case may be, by their Funding Agency/Agencies.

**Article 13. Amendments**

13.1 The MoU may be amended at any time in accordance with the General Conditions.

13.2 Any amendment is subject to prior agreement of the CB. No amendment shall be valid unless it has written form, and is signed by the Parties.

13.3 Notwithstanding the foregoing it is agreed that the CB shall have authority to decide on any update of information in the Annexes, without the need for signature of a corresponding amendment.

13.4 The Collaborating Institutions will make every effort to ensure that the information contained in the Annexes to this MoU is kept up-to-date. To this end it shall review the information at least annually.

**Article 14. Annexes**

All Annexes are an integral part of this MoU.
This MoU is produced in 24 original documents in the English language, each pair signed by CERN as Host Laboratory and by a Collaborating Institutions.

Signed in Geneva on 28.3.2019

For CERN

Eckhard Elsen
Director for Research and Computing
ANNEXES

1. List of Collaborating Institutions
2. List of Funding Agencies
3. Details on tasks and procedures of the Collaboration bodies responsible for its management
4. List of persons currently holding management and other senior positions within the Collaboration
5. Structure of the Experiment and responsibilities of Collaborating Institutions
6. Financial Plan
7. General Conditions applicable to Experiments at CERN
Annex 1  Collaborating Institutions in the Collaboration and the names of their Contact Persons

<table>
<thead>
<tr>
<th>No.</th>
<th>Country</th>
<th>Town</th>
<th>Collaborating Institution</th>
<th>Contact Person</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Switzerland</td>
<td>Geneva</td>
<td>CERN</td>
<td>J. Boyd</td>
</tr>
<tr>
<td>2</td>
<td>Japan</td>
<td>Kyushu</td>
<td>Kyushu RCAPP</td>
<td>H. Otono</td>
</tr>
<tr>
<td>3</td>
<td>Japan</td>
<td>Kyushu</td>
<td>Kyushu University</td>
<td>T. Ariga</td>
</tr>
<tr>
<td>4</td>
<td>Japan</td>
<td>Nagoya</td>
<td>Nagoya University</td>
<td>O. Sato</td>
</tr>
<tr>
<td>5</td>
<td>Israel</td>
<td>Haifa</td>
<td>Technion</td>
<td>E. Kajomovitz</td>
</tr>
<tr>
<td>6</td>
<td>China</td>
<td>Beijing</td>
<td>Tsinghua University</td>
<td>X. Chen</td>
</tr>
<tr>
<td>7</td>
<td>Switzerland</td>
<td>Bern</td>
<td>Universität Bern</td>
<td>A. Ariga</td>
</tr>
<tr>
<td>8</td>
<td>Germany</td>
<td>Mainz</td>
<td>Universität Mainz</td>
<td>M. Schott</td>
</tr>
<tr>
<td>9</td>
<td>USA</td>
<td>Irvine</td>
<td>University of California, Irvine</td>
<td>J. L. Feng</td>
</tr>
<tr>
<td>10</td>
<td>Switzerland</td>
<td>Geneva</td>
<td>University of Geneva</td>
<td>G. Iacobucci</td>
</tr>
<tr>
<td>11</td>
<td>USA</td>
<td>Eugene</td>
<td>University of Oregon</td>
<td>E. Torrence</td>
</tr>
<tr>
<td>12</td>
<td>USA</td>
<td>Seattle</td>
<td>University of Washington</td>
<td>S.-C. Hsu</td>
</tr>
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</table>
Annex 2  Funding Agencies of the Collaboration and their Representatives

<table>
<thead>
<tr>
<th>No.</th>
<th>Country</th>
<th>Town</th>
<th>Agency</th>
<th>Represented by</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Switzerland</td>
<td>Geneva</td>
<td>CERN</td>
<td>E. Elsen</td>
</tr>
<tr>
<td></td>
<td>USA</td>
<td>Irvine</td>
<td>University of California, Irvine</td>
<td>Grace J. Park</td>
</tr>
</tbody>
</table>

26 March 2019
Annex 3  Details on tasks and procedures of the Collaboration bodies responsible for its management

1  Collaboration Board

1.1. The Collaboration Board (CB) is composed of one nominated representative (IR) per Collaborating Institution. The Spokesperson or Co-Spokespersons, as the case may be, and the CERN contact person attend the CB as ex-officio members; the CB Chair can invite additional experts as ex-officio members.

1.2. In case a nominated IR cannot attend a CB meeting, he/she can nominate an IR delegate (proxy) representing the institute and carrying all rights and duties of the IR. The Institute shall inform the CB Chair in advance of the meeting.

1.3. The CB elects among the IR the CB Chair for a period of two years.

1.4. Every Collaborating Institution, represented by the IR or a proxy, has one vote. Ex-officio members do not have voting rights in their capacity as such.

1.5. Subject to the following quorum requirements, decisions are taken by a simple majority of the members present; if there is a tie, the vote of the person chairing the meeting is the deciding one:

1.5.1. A vote on a change of the Annexes of the MoU requires a majority of the CB members to participate in the vote.

1.5.2. To start a procedure to change of parts of the MoU other than the Annexes, requires that at least 2/3 of the CB members to participate in the vote.

1.5.3. In all other cases, a vote requires at least one-third of the CB members to participate in the vote.

1.6. The CB elects at least one Spokesperson and no more than two Co-Spokespersons by secret votes. Every CB member has one vote. A proposed person is elected if he/she gets the majority of the submitted votes. Failing majority, the election is repeated with the two proposals that got the most and second most votes in the first round, eliminating all other proposals. The Spokesperson or Co-Spokespersons, as the case may be, is/are elected for a period of two years.

1.7. Other elections, votes and nominations are performed openly unless one or more CB member(s) request a secret procedure, in which case the election, vote or nomination must be held secretly.

1.8. The CB can ask at any time for oral or written progress reports, minutes or other information from the committees or persons it has appointed.

1.9. The CB can revoke any appointment at any time, if it is not satisfied with the quality or progress of the work.

1.10. In case of Collaborating Institutions that fail to contribute actively to the Collaboration, the CB can request the Spokesperson or Co-Spokespersons, as the case may be, to contact that Collaborating Institution to enquire about the possibility or intention to provide a more active participation. In the case this latter could not be achieved, the Collaborating Institution is asked by the CB Chair to resign from the collaboration or dismiss the Collaborating Institution.
from the collaboration.

1.11. Draft minutes of the CB meetings shall be distributed no later than one month after the meeting, and be submitted for approval to the following meeting.

2 CB Chair

2.1 The CB Chair calls the CB meetings, prepares and distributes the draft agenda at least one week in advance of the respective meeting, and chairs the CB meetings.

2.2 The CB Chair designates another person to take the role of scientific secretary of the CB and, in particular, to write minutes for each CB meeting.

2.3 The CB Chair handles requests for changes of the Collaboration membership.

2.4 The CB Chair helps the Spokesperson or Co-Spokespersons, as the case may be, to maintain the communication with the Collaborating Institutions.

2.5 A Spokesperson replaces the CB Chair and, in particular, chairs CB meetings in case of absence or unavailability of the CB Chair.

3 Spokesperson or Co-Spokespersons

3.1. In the event that the CB elects two Co-Spokespersons, the Co-Spokespersons take all decisions in mutual agreement. Where the Co-Spokespersons are not able to reach a consensus on a decision, the subject shall be brought for decision to the Collaboration Board, which can also decide to dismiss a Spokesperson or Co-Spokesperson.

3.2. In case a Spokesperson or Co-Spokesperson is elected under his/her affiliation to CERN, he/she will also be the CERN contact person.
## Annex 4 Persons holding management positions within the Collaboration

<table>
<thead>
<tr>
<th>Co-Spokespersons</th>
<th>Jonathan Feng (UCI)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>James Boyd (CERN)</td>
</tr>
</tbody>
</table>

| CB Chair               | The CB Chair will be elected at the next Collaboration Board meeting, and will be displayed on the web-page: [https://twiki.cern.ch/twiki/bin/view/FASE...](https://twiki.cern.ch/twiki/bin/view/FASER/WebHome#FASE_R_Management) |
Annex 5  
Structure of the Experiment and responsibilities of Collaborating Institutions

<table>
<thead>
<tr>
<th>Project</th>
<th>Sub-project</th>
<th>Responsible</th>
</tr>
</thead>
<tbody>
<tr>
<td>Tracker</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Mechanics</td>
<td>H. Otono (Kyushu RCAPP)</td>
</tr>
<tr>
<td></td>
<td>Readout</td>
<td>F. Cadoux (Geneva)</td>
</tr>
<tr>
<td></td>
<td>Powering/Interfaces</td>
<td>H. Otono (Kyushu RCAPP)</td>
</tr>
<tr>
<td></td>
<td>QA</td>
<td>S. Kuehn (CERN)</td>
</tr>
<tr>
<td>Calorimeter/Scintillator</td>
<td></td>
<td></td>
</tr>
<tr>
<td>TDAQ</td>
<td>Trigger</td>
<td>A. Sfyrla (Geneva)</td>
</tr>
<tr>
<td></td>
<td>DAQ</td>
<td>B. Petersen (CERN)</td>
</tr>
<tr>
<td></td>
<td>DCS</td>
<td>E. Kajomovitz (Technion)</td>
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<tr>
<td>Detector Support</td>
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<table>
<thead>
<tr>
<th>Collaborating Institution</th>
<th>Responsibilities</th>
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</thead>
<tbody>
<tr>
<td><strong>CERN</strong></td>
<td>Host lab responsibilities:</td>
</tr>
<tr>
<td></td>
<td>- Detector transport, installation of services</td>
</tr>
<tr>
<td></td>
<td>- Preparation of T112 site (civil engineering)</td>
</tr>
<tr>
<td></td>
<td>- Production of magnets (paid for with funds from the CCF)</td>
</tr>
<tr>
<td></td>
<td>Contributions as a Collaborating Institute to:</td>
</tr>
<tr>
<td></td>
<td>- Tracker QA (35%)</td>
</tr>
<tr>
<td></td>
<td>- Calorimeter/Scintillator (80%)</td>
</tr>
<tr>
<td></td>
<td>- TDAQ Trigger (30%)</td>
</tr>
<tr>
<td></td>
<td>- TDAQ DAQ (50%)</td>
</tr>
<tr>
<td></td>
<td>- TDAQ DCS (10%)</td>
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<tr>
<td><strong>University of Geneva</strong></td>
<td>Contributions to:</td>
</tr>
<tr>
<td></td>
<td>- Tracker Mechanics (100%)</td>
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<tr>
<td></td>
<td>- Tracker Readout (80%)</td>
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<tr>
<td></td>
<td>- Tracker QA (15%)</td>
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<tr>
<td></td>
<td>- TDAQ Trigger (60%)</td>
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<td>- TDAQ DAQ (25%)</td>
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<tr>
<td></td>
<td>- Detector Support (10%)</td>
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<tr>
<td><strong>Kyushu RCAPP</strong></td>
<td>Contributions to:</td>
</tr>
<tr>
<td></td>
<td>- Tracker Readout (20%)</td>
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<td></td>
<td>- Tracker Powering/Interfaces (80%)</td>
</tr>
<tr>
<td></td>
<td>- Tracker QA (35%)</td>
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<tr>
<td><strong>Technion</strong></td>
<td>Contributions to:</td>
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<tr>
<td></td>
<td>- TDAQ Trigger (10%)</td>
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<td></td>
<td>- TDAQ DAQ (25%)</td>
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<td></td>
<td>- TDAQ DCS (90%)</td>
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<td><strong>Mainz University</strong></td>
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<td></td>
<td>- Tracker QA (15%)</td>
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<tr>
<td></td>
<td>- Calorimeter/Scintillator (20%)</td>
</tr>
<tr>
<td><strong>Tsinghua University</strong></td>
<td>Contributions to Tracker Powering/Interfaces (20%)</td>
</tr>
<tr>
<td><strong>University of Washington</strong></td>
<td>Contributions to Detector Support (90%)</td>
</tr>
</tbody>
</table>
Annex 6  Financial Plan

The expected costs of the hardware for the different FASER detector projects is shown below. The CFF will include 20% contingency on top of the total shown below.

<table>
<thead>
<tr>
<th>Item</th>
<th>Cost (kCHF)</th>
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<tbody>
<tr>
<td>Magnet</td>
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<tr>
<td>Calorimeter/Scintillator</td>
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<tr>
<td>Tracker Mechanics</td>
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<tr>
<td>Tracker Power/Cooling</td>
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<tr>
<td>Trigger &amp; Readout</td>
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<td>Detector Support</td>
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<tr>
<td>Spares</td>
<td>56</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>824</strong></td>
</tr>
</tbody>
</table>
Annex 7  General Conditions applicable to Experiments at CERN (20 February 2008)

(Terms with a particular meaning in the context of this document are defined at the end – their first occurrence in the document is indicated with a reference number thus: term)

The mission of the European Organization for Nuclear Research (“CERN”) is to sponsor international scientific research in high-energy physics.

This document (the “General Conditions”) sets out the rules and procedures in organisational, managerial and financial matters, which apply to the participation by Universities and Research Institutions (the “Collaborating Institution(s)”) in experiments at CERN. The Collaborating Institutions jointly constitute the “Collaboration”. They provide, and are responsible for, the Visiting Research Teams (the “Team(s)”) carrying out the experiment.

The General Conditions also define CERN’s role as Host Laboratory of the experiment, which must be distinguished from its role as a Collaborating Institution, as the case may be.

Any reference made in the General Conditions to a specific document shall be to its most recent version.

1. SCOPE OF APPLICATION

The General Conditions apply to Approved Experiments (the “Experiment(s)”) carried out on the CERN site. They do not apply to Recognised Experiments.

2. PARTIES AND THEIR REPRESENTATION

2.1. The parties involved in the Experiment (the “Party” or the “Parties”) are:

- CERN as Host Laboratory;
- The Collaborating Institutions (including, as the case may be, CERN).

2.2 Each Party shall have a representative:

- CERN as Host Laboratory shall be represented by its Director of Research, acting on behalf of the Director-General;
- The Collaboration shall appoint a Spokesperson, who shall represent the Collaboration to the outside, including to CERN as Host Laboratory, and co-ordinate its work. Where the Spokesperson is not stationed full-time at CERN, the Collaboration shall also appoint a Contactperson at CERN;
- Each Collaborating Institution shall appoint a Team Leader who shall represent it in its relations with CERN as Host Laboratory. The Team Leader’s responsibilities are detailed in the “Appointment of Team Leader” form (available on the Users’ Office Web site – see Article 5.7).

2.3 Each Collaborating Institution shall ensure that the members of its Team (the “Team Member(s)”) comply with the General Conditions.
3. **BASIC DOCUMENTS GOVERNING THE EXECUTION OF THE EXPERIMENT**

3.1 The following documents shall constitute the formal basis for the Experiment:

3.1.1 the **EXPERIMENTAL PROPOSAL**, after its approval by the CERN Research Board on the recommendation of the Experiment Committee dealing with the appropriate part of the physics programme (the “Experiment Committee”);

3.1.2 the **TECHNICAL DESIGN REPORTS**, where appropriate;

3.1.3 the **MEMORANDUM OF UNDERSTANDING** (the “MoU”), which sets out the detailed arrangements specific to the Experiment and which shall be agreed and signed by CERN as Host Laboratory and the Collaborating Institutions, for the purpose of signature represented, as the case may be, by their Funding Agencies(5). Through the signature of the MoU, the Collaborating Institutions accept its terms;

3.1.4 the **GENERAL CONDITIONS**.

**Contents of the MoU**

3.2 The MoU may be a single document setting out the arrangements for construction, installation, maintenance and operation, or it may comprise two documents, one for construction and installation and the other for maintenance and operation. As a guide, the essential parts of the MoU are the following:

a) a list of the Collaborating Institutions responsible for the Teams carrying out the Experiment;

b) a list of the Funding Agencies of the Collaboration;

c) details of the persons with specific responsibilities in the Experiment;

d) the obligations of the Parties for:

i. construction and installation
   - the obligations for construction and installation of the detector components and the auxiliary equipment (jointly the “Equipment”);
   - a breakdown of the funding requirements for the Equipment, together with the contributions of the Parties;
   - a timetable for the construction and installation of the Equipment;

ii. maintenance and operation
   - the obligations for maintenance and operation of the Equipment;

f) references to any specific agreements and Protocols relevant to the Experiment, copies of which shall be included as Appendices to the MoU.

4. **ORGANISATION OF THE COLLABORATION**

**Internal autonomy and co-ordination with CERN as Host Laboratory**

4.1 In its internal relations, the Collaboration shall be free to take such organisational decisions as deemed necessary, always subject to the terms of the MoU and the General Conditions. Any financial arrangements between CERN as Host Laboratory and the Collaboration shall be subject to the Financial and Administrative Provisions for Visiting Research Teams.
Co-ordination in matters of safety

4.2  The Leader of the CERN Department responsible for the physics programme of which the Experiment is part shall appoint a Group Leader in Matters of Safety (GLIMOS), on the proposal of the Spokesperson. The rights and responsibilities of the GLIMOS are defined in the document “Safety Policy at CERN - SAPOCO/42”.

Finance Review Committee/Resources Review Board

Initial Decision

4.3 For Experiments involving large capital investments, a Finance Review Committee (FRC) or a Resources Review Board (RRB) may be set up by agreement of CERN as Host Laboratory and the Collaboration.

Membership

4.4 The FRC/RRB shall consist of one representative of each Funding Agency, along with the Managements of CERN and the Collaboration. It shall be chaired by the CERN Director of Research.

Terms of reference

4.5 The role of the FRC/RRB includes:
   - reaching agreement on the MoU;
   - approving any modification of, or addition to, the Experiment that would require amending the MoU;
   - monitoring the supply of Equipment according to the agreed schedule;
   - monitoring the Common Projects⁶ and the use of the Common Funds⁷;
   - monitoring the general financial and manpower support;
   - approving a maintenance and operation procedure and monitoring its functioning;
   - approving the annual construction and installation budgets as well as those for maintenance and operation.

4.6 The Collaboration Management reports to the FRC/RRB on technical, managerial, financial and administrative matters, and on the composition of the Collaboration.

5.  CERN'S OBLIGATIONS AS HOST LABORATORY

PRINCIPLES

Installation

5.1 The Collaboration shall ensure that the Equipment and counting rooms meet the CERN Safety Rules. Provided that this is the case, CERN shall agree in writing to their installation in the appropriate experimental area.

Duration

5.2 CERN shall agree to keep the Equipment on-site during the data-taking for the experimental programme approved by the CERN Research Board.
Network connections

5.3 CERN shall agree that computers and peripherals belonging to the Collaboration, which are needed for the operation of the Equipment, may be connected to the CERN computer network, provided they meet its compatibility and security standards, including as set out in the document “Operational Circular No 5 – Use of CERN Computing Facilities” and subsidiary rules.

Insurance

- Property

5.4 CERN shall at its expense insure against the risks of fire, explosion, natural disaster and water damage all items belonging to the Collaboration or a Collaborating Institution, once they have been delivered to the CERN site, added to the Ownership Inventory (Article 6.10) and accepted in writing by CERN. CERN shall not insure such items against the risks of transport, crane or rigging accidents. It may however offer the possibility that such insurance is taken out at the expense of the Collaborating Institution(s) concerned.

- Third party liability

5.5 CERN shall at its expense insure the members of the Collaborating Institutions against third party liability incurred by them at CERN in the execution of the Experiment.

- Limitation of coverage

5.6 The insurance covers defined in Articles 5.4 and 5.5 are subject to the provisions, including the specified deductibles, exclusions and limits, of CERN’s insurance policies. Any risk or amount not covered by such policies shall be for the exclusive account of the Collaboration. CERN does not warrant or accept liability as to the sufficiency of its insurance policies in relation to the risks incurred by the Collaboration.

SERVICES

User support, Users’ Office and ACCU

5.7 CERN operates a Users’ Office as a point of contact with the user community. Documentation for users is maintained on the Users’ Office Web site, which can be accessed through the CERN home page (http://www.cern.ch). CERN shall provide access to its services, as described in the “CERN Guide for Newcomers” (available from the Users’ Office Web site). The Users’ Office provides assistance on questions concerning access to the services provided by CERN.

The Advisory Committee of CERN Users (ACCU) promotes links between CERN Management and the User Community and advises CERN Users on the working conditions and the arrangements for technical support.

Standard services and facilities

5.8 CERN normally provides, free of charge and within the limits and constraints imposed by the available resources and schedules of accelerators, the following standard services and facilities for the duration of the Experiment:

Particle beams and equipment

a) particle beams and related shielding, monitoring equipment and standard communication with the accelerator control rooms;

b) beam time allocation and scheduling, in accordance with the recommendations of the Experiment Committee;
c) test-beam time for testing prototypes and calibrating final detector components, subject to the applicable scheduling and allocation procedures;

**Space**

d) floor space in the experimental area(s) for the Equipment;
e) laboratory and hall space for construction, testing and assembly of the Equipment;
f) temporary short-term storage space for spare parts, handling and assembly tools and Equipment that is awaiting installation or removal. CERN reserves the right to charge the cost of longer-term storage of the above items to the Collaborating Institution(s) concerned;
g) office space, equipped with standard furniture and infrastructure facilities including network connections, telephones and electricity;

**Supplies and installations at the Experiment**

h) assistance with the installation and removal of the Equipment, such as the provision of crane and rigging services, geometrical survey and alignment, as well as transport of the Equipment on and between the parts of the CERN site and inside the experimental areas;
i) mechanical infrastructure, local infrastructure for the supply of mains electricity, raw cooling water, compressed air and standard connections to the CERN communication network;

**Computing**

j) central computing resources for the Collaboration, in amounts to be decided in accordance with the applicable CERN allocation procedures

**Transport of persons**

k) basic transportation for personnel between the main parts of the CERN site, including the experimental areas;

**Safety services**

l) access to its safety services for advice, inspection and verification, and first aid or other emergency help;

**Administrative services**

m) access to its administrative services to assist the Collaboration in financial matters, in accordance with the Financial Rules and the Financial and Administrative Provisions for Visiting Research Teams;

**Purchasing services**

n) access to its purchasing services to assist the Collaboration in placing purchase orders and contracts for its account, in accordance with the CERN Financial Rules and the CERN Purchasing Procedures. In such cases there is immediate automatic transfer of ownership to the Collaborating Institution(s) for which the purchase is made. This(These) Institution(s) shall hold CERN free and harmless from liability arising from such assistance;

**Maintenance and operation**

o) the resources needed to operate and maintain the standard infrastructure and other equipment supplied by CERN as Host Laboratory.
Special services
5.9 A variety of services other than those specified above may be provided to the Collaboration on request, subject to the availability of resources. Such services shall be charged according to the applicable conditions.

Special equipment
5.10 Any additional infrastructure equipment to be provided by CERN, as well as the obligations of CERN and the Collaborating Institutions with regard to the construction, installation, maintenance and operation of such equipment, shall be explicitly mentioned in the MoU.

6. OBLIGATIONS OF THE COLLABORATING INSTITUTIONS

Basic obligations
6.1 In their capacity as members of the personnel of CERN\(^8\), the Team Members shall be subject to the authority of the Director-General of CERN and shall comply with the rules and regulations in force at CERN. Items brought onto the site by the Collaboration are subject to the rules and regulations in force at CERN.

Status of personnel
6.2 Each Collaborating Institution shall ensure that its Team Members shall for the duration of their Contract of Association\(^9\) with CERN (the “Contract of Association”) remain employed by, and receive a salary from, their Collaborating Institution. It is understood that where they are students, the Team Members shall remain enrolled at their Collaborating Institution, and where they have a sponsor, they shall remain under contract with, and continue to be financed by, their sponsor.

6.3 Each Collaborating Institution shall ensure the provision of adequate social and third party liability insurance cover to its Team Members and the members of their family accompanying them. The social insurance must include cover against the financial consequences of illness and accidents that is adequate in the Host States of CERN for the duration of the Contract of Association.

6.4 Each Collaborating Institution shall be liable to CERN for any cost or expense resulting from the situation where its Team Members have insufficient insurance cover.

Medical surveillance and certificates
6.5 Each Collaborating Institution shall remain responsible for the medical surveillance of its Team Members and, in the case of Team Members who are to work in conditions which are deemed to pose special risks (e.g. radiation controlled areas), shall supply to the CERN Medical Service a certificate of medical fitness, for the first time on registration of the Team Member at CERN and then every two years thereafter (a form for such certificates is available on the Users’ Office Web site – Article 5.7).

Safety briefings and inspections
6.6 The Collaborating Institutions, in conjunction with the CERN Department responsible for the physics programme of which the Experiment is part, shall ensure the safety of the Team Members and the Equipment. The Collaborating Institutions shall participate in safety meetings and studies of the Experiment. They shall ensure compliance by the Team Members with the CERN Safety Rules.
Each Team Member has specific safety responsibilities and obligations, as defined in the document “Safety Policy at CERN - SAPOCO/42”. The Team Members shall attend the CERN safety course(s) for newcomers, any compulsory CERN safety course, and all specific safety courses deemed necessary by the Collaboration.

The CERN safety personnel shall be entitled to carry out safety visits, checks and inspections as well as other safety measures set out in the document “Safety Policy at CERN - SAPOCO/42”.

Supply of Equipment

6.7 The Collaborating Institutions shall make available on the CERN site, according to an agreed timetable and in working order, the Equipment that they have undertaken to supply and commission. The Spokesperson shall promptly inform the CERN Director of Research of any material failure to meet the agreed schedule. For experiments with an FRC/RRB, this body shall monitor such matters.

Transport, installation and dismantling of Equipment

6.8 Each Collaborating Institution supplying Equipment shall be responsible for its delivery to and removal from the CERN site, always in compliance with applicable export laws and restrictions. All such Equipment shall be properly documented to indicate its ownership status (Article 6.10) handling requirements and any potential hazards that it may pose. The Collaborating Institutions shall be collectively responsible for the installation and dismantling of the Equipment.

Ownership of Equipment

6.9 Except as may be agreed in writing by the owner and CERN as Host Laboratory, the delivery of Equipment to the CERN site or its handling on the CERN site shall not affect its ownership. The owner and CERN as Host Laboratory may agree in writing to transfer to CERN the ownership of Equipment which is no longer required by the Collaboration.

Ownership inventory

6.10 As a condition of coverage by CERN’s insurance policy, the Collaboration shall provide CERN with a list of the Equipment which it brings on the CERN site, specifying for each item the owning Collaborating Institution(s) or joint ownership by the Collaboration. It shall keep the list up-to-date and inform CERN promptly of any modifications.

Maintenance and operation of Equipment

6.11 The Collaborating Institutions shall be collectively responsible for the maintenance and operation of the Equipment, and for providing the resources necessary to carry out the experimental programme.

Assignment of Equipment

6.12 Any Collaborating Institution providing Equipment shall continue to make it available to the Collaboration until the Experiment has been declared completed (Article 8.2).

Early removal of Equipment

6.13 The Collaboration may request the removal from the CERN site under the responsibility of the owning Collaborating Institution(s) of any Equipment which in the opinion of the Collaboration is no longer required for the Experiment.

Release of space

6.14 Space allocated for construction and assembly shall be released when these activities have terminated. As Host Laboratory, CERN reserves the right to change the space allocation during
the lifetime of the Experiment. As soon as the Experiment has been declared completed (Article 8.2), all space used by the Collaboration, including office and laboratory space, and the space used for testing and running the Experiment, shall be made available to CERN for reallocation.

Removal of Equipment
6.15 Equipment shall be removed from the CERN site under the responsibility of the owning Collaborating Institution(s) within six months following a request from the Leader of the CERN Department responsible for the physics programme of which the Experiment is part.

6.16 The dismantling and removal of the Equipment must respect the CERN Safety Rules and the laws of the countries through which the dismantled Equipment will transit during the removal, including the country of its final destination (e.g. transport, disposal, elimination of special or radioactive waste). Except as may be agreed in writing by the Collaboration and CERN, the associated costs shall be borne by the Collaboration.

7. INTELLECTUAL PROPERTY

Publication and use of data and knowledge
7.1 CERN is bound by its Convention to publish or otherwise make generally available the results of its experimental and theoretical work.

7.2 The Collaborating Institutions shall strive to publish any data and knowledge resulting from the experiment through Open Access journals. Where the copyright in an article shall be transferred to the publisher, each Collaborating Institution shall ensure that it has the necessary internal authorisations to approve such a transfer.

7.3 Subject to Articles 7.4 and 7.5, each Collaborating Institution and CERN as Host Laboratory shall be entitled to use any data and knowledge resulting from the Experiment for its own scientific non-military purposes.

Contribution of proprietary information
7.4 A Collaborating Institution contributing proprietary information to the Collaboration shall ensure that it has or has procured the rights to use, and to contribute to the Collaboration for use by the other Collaborating Institutions, such proprietary information for the execution of the Experiment. The term “use” shall include any integration, modification, enhancement and redistribution. Where the use of proprietary information is subject to restrictions, the contributing Collaborating Institution shall disclose them in writing when making its contribution available to the Collaboration. The obligations defined in this article shall apply whether or not the proprietary information is pre-existing or developed in the execution of the Experiment, and whether or not it was developed individually or jointly with one or more other institution(s).

Use of proprietary information
7.5 The contribution by a Collaborating Institution of any proprietary information, including information protected by trademark, patent or copyright, shall not create any right in respect of such information for the other Collaborating Institutions, other than a free, irrevocable and non-exclusive licence to use such information in the execution of the Experiment.

Publication and disclosure of proprietary information
7.6 Subject to the intellectual property rights of the Collaborating Institutions having contributed the proprietary information and taking into account any potential for commercial exploitation,
the Collaborating Institutions shall strive to publish and make publicly available all proprietary information contributed to the Collaboration. In particular, they shall consider making any software available under Open Source licence conditions.

Limitation of liability
7.7 The Collaborating Institutions provide no warranties or representations of any kind to each other. Each Collaborating Institution shall use the data and knowledge resulting from the Experiment and the proprietary information contributed to the Collaboration at its own risk. The Collaborating Institutions shall have no liability to each other with respect to the subject matter of this Article 7.

8. FINAL PROVISIONS

Modification of the Experiment and amendment to the MoU
8.1 The Collaboration shall agree on any modification of or addition to the Experiment that would require amending the MoU and shall inform CERN as Host Laboratory of such changes. For experiments with an FRC/RRB, such changes shall also be approved by this body. Where the changes constitute a substantial change to the Experiment, they shall be submitted to the Experiment Committee for approval by the CERN Research Board and the Director-General. Any amendment to the MoU shall be signed by the representatives of the parties to the MoU.

Duration of applicability of the MoU
8.2 Unless another duration is specified in the MoU, the MoU shall remain in force until the CERN Director of Research, in agreement with the Spokesperson, has declared the Experiment completed, the Equipment has been dismantled and the arrangements for its disposal agreed in writing.
8.3 Notwithstanding the foregoing, the General Conditions shall remain in force.

Observance of the MoU and the General Conditions
8.4 The MoU is not legally binding but the parties to the MoU recognise that the success of the Collaboration depends upon their adherence to its provisions. Any default under its provisions shall be dealt with, in the first instance, by the Collaboration in consultation with the CERN Management and if necessary then by the FRC/RRB (where such a body exists).
8.5 Notwithstanding the foregoing, the provisions of the General Conditions are binding.

Liability
8.6 Except as specifically stipulated in the General Conditions, the Parties shall not be liable to each other for any loss or damage arising in connection with the Experiment.

Arbitration
8.7 If a dispute within the Collaboration or between the Collaboration and CERN as Host Laboratory cannot be resolved amicably, it shall be referred by any party to the dispute for arbitration to the President of the CERN Council, whose decision shall be binding and final, without right of revision or appeal.

Relevant documents
8.8 The following documents apply to the execution of the MoU:
- the CERN Guide for Newcomers;
- Financial and Administrative Provisions for Visiting Research Teams;
- Use of CERN Computing Facilities - Operational Circular No 5
  (http://cern.ch/ComputingRules/);
- the Safety Policy at CERN - SAPOCO/42;
- Purchasing Rules and Procedures for Experiments at CERN

Definitions

1) **Visiting Research Team**: A Collaborating Institution’s personnel involved in the Experiment.

2) **Approved Experiment**: An Experiment approved by the CERN Research Board and the Director-General after consideration of a written proposal submitted to the appropriate Experiment Committee, taking into account scientific interest, technical feasibility and the constraints imposed by available resources.

3) **CERN Site**: All parts of CERN’s fenced-in domain and all of its underground works.

4) **Recognised Experiments**: An experiment in fields allied to particle physics, such as astroparticle physics, the full definition of which was decided by the CERN Research Board (CERN/DG/RB 99-285). The conditions applicable to such experiments are decided by the CERN Research Board on a case-by-case basis.

5) **Funding Agency**: A body providing resources to one or more of the Collaborating Institutions for the purpose of participation in the Experiment. A Collaborating Institution may itself be a Funding Agency.

6) **Common Project**: A project that the Collaboration has decided to manage jointly under the authority of the Collaboration Management.

7) **Common Funds**: Funds contributed by the Funding Agencies to joint accounts administered by the Collaboration Management.

8) **Member of the personnel of CERN**: All Team Members who are not employed by CERN are required to sign a Registration Form, in which they apply to become an associated member of the personnel of CERN.

9) **Contract of Association**: The contract defined in Article RI 2.04 of the Staff Rules and Regulations of CERN.

10) **Open Access**: The free, irrevocable, worldwide right of access to, and use of, a work in any digital medium for lawful purposes, subject to proper attribution of authorship.