



About CMS

The Compact Muon Solenoid (CMS) is one of the most complex and precise scientific instruments ever constructed and is presently in operation at the Large Hadron Collider (LHC) at CERN. The CMS detector was built and is run by an international collaboration of over 180 institutes from more than 40 countries. CMS records data from both proton collisions and ion collisions provided by the LHC, gathering a wealth of valuable information to probe the fundamental nature of our Universe. Since 2010, the Collaboration has published over 300 scientific papers from these data. The highlight of the CMS programme so far has been the discovery of a new particle — a Higgs boson — announced on 4 July 2012. With the LHC start-up again in 2015, CMS will continue the pursuit of physics at the highest energies ever created.

CMS Membership

Procedure for Considering New Collaborators

New countries or institutes, which envisage joining the CMS Collaboration, are expected to contribute in a meaningful way to the experiment. This is principally related to providing relevant technical expertise, operating the detector and carrying out the physics research programme.

Furthermore, new applicants are expected to contribute to the costs of the experiment. This consists of an initial entry fee, which is intended to balance the very substantial investments made by current CMS members in the initial construction of the detector and to provide resources necessary for further infrastructure investments. In addition to this, they are expected to participate in its annual running costs.

In order to launch the necessary procedure, a country or an institution wishing to join the Collaboration should contact the CMS Spokesperson expressing its interest. This should normally be done in the form of a letter. The Spokesperson then will bring the matter to the attention of the Management Board to explore how the prospective collaborators might be integrated into the experiment and consult the relevant Regional Representative.

Subsequently, a letter will be sent to the applicant by the CMS Resources Manager requesting information concerning financial viability.

The prospective collaborator will be invited to give a short presentation at a Collaboration Board meeting providing information on the composition of their research group, relevant experience and their proposed contribution to the experiment. After the presentation, the Collaboration Board will have a



discussion and any questions raised will be passed on to the applicant for clarification.

The Collaboration Board Chairperson, the Spokesperson and the Resources Manager will meet the applicants and the appropriate Funding Agency Linkperson to discuss the terms of entry. A final decision will be made at a later Collaboration Board meeting by voting.

Terms and conditions for joining the CMS Collaboration

The prospective collaborators should demonstrate their ability to meet the following conditions applicable for CMS membership:

- A financial contribution representing an entry fee of 300'000 CHF for a new country and 150'000 CHF for a new institution from a country (Funding Agency) that is already a CMS member;
- There is a possibility of negotiating a partial in-kind contribution in the event that the applicant can propose facilities or services that are of value to the experiment;
- Participation in the Maintenance and Operation (M&O) of the CMS Detector both for detector-wide items (M&O-A) as well as those related to specific Sub-systems (M&O-B);
- The M&O-A contributions are payable annually in cash and managed at the country (Funding Agency) level. The amounts due for M&O-A are adjusted each year and determined on the basis of the number of scientists holding a PhD (this also includes engineers) who sign CMS publications. The current level of payment (for 2015) is approximately 10'000 CHF per author. No payment is required for the first year of membership in CMS regardless of the number of authors. PhD students obtain signature rights without the obligation of any payment;
- For M&O-B, the amounts per author are at a lower level, dependent on the Sub-system in which one participates, and can be largely provided in-kind;
- An appropriate contribution to the CMS Common Projects such as computing facilities and their common maintenance and operation as agreed at the level of Resources Review Board (RRB);
- Contribution of appropriate share of the effort needed to install, commission and run the detector, including calibration and shift work;
- Payment for any travel and subsistence of their personnel as required
- Participate in funding any detector upgrades including R&D, prototyping, calibration, installation, commissioning and operation.



Additional Information

Institutes interested in participating in the CMS Collaboration can also consider other options as an alternative or prior to joining CMS as full members. Two specific types of status are available which do not require meeting all of the afore-mentioned financial conditions applicable for full membership.

Such institutes have observer (non-voting) membership of the Collaboration Board and their members will not normally be included as authors of CMS physics publications.

A similar procedure for application is followed as for full CMS membership. However, the only financial commitment requested from these institutes is to cover any travel and subsistence expenses of their personnel as well as contributions in terms of computing resources and/or technical support.

Associated Institute

This status provides the means of formally recognizing a group supplying specialist expertise in computing or engineering, but not normally interested in participating in the physics analyses of CMS data. Although members of Associated Institutes are not typically granted signing rights, they may sign CMS related technical papers to which they have contributed.

Cooperating Institute

Cooperating Institute status, which has a limited duration, allows new institutions intending to join CMS to gain experience, access the physics data and collaboration tools while ramping up to a full membership status.