

Management of conference presentations in CMS

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While presentations of the scientific output to the community in conferences and workshops constitute a major duty of any collaboration, large collaborations face the issue of ensuring the highest quality, a proper recognition of the work done by members, and an adequate representation of all the contributing bodies and institutions. In this paper, the management of conference presentations by the CMS collaboration as well as a statistical analysis over the past 13 years are summarized.

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*Speaker

1. Introduction

Open conferences and workshops offer the opportunity to present new scientific results and ideas and discuss them with a broad audience: they represent one of the key tools for the advancement of science. In recent years, with the increase of the technological complexity of the experiments, collaborations with hundreds and even thousands of members have become common. The CMS experiment at the LHC comprises more than 4000 physicists and engineers from more than 40 countries. Since the first beam collisions in 2008, the CMS collaboration presented results of the obtained measurements at various kinds of conferences, either international or national: given the large number of participants, a rigorous organization of the participation in conferences has been mandatory. CMS collected an unprecedented amount of data of presentations that for the first time can be used to build a study case of the management of science dissemination. In this paper we summarize the methods adopted in CMS to organize the participation in conferences and the results of various analyses of data about the speakers' participation.

2. The CMS conference committee and the CINCO web tool

To coordinate the management of presentations at conferences, CMS constituted a standing conference committee, currently composed of 13 members, appointed by the collaboration board for renewable, staggered 2-year terms, and also including the spokesperson, the physics coordinators, and the collaboration board and publication committee chairs. The tasks of the CMS conference committee as outlined in the CMS constitution include the promotion and facilitation of the presentation of results of CMS to the broad international public in conferences, workshops, and symposia. Also, presentations at international laboratories are treated as conference talks - currently, general seminars at CERN and the Fermilab "Wine and Cheese" seminar series fall into this category. In addition, presentations at national meetings and certain other events (such as Ph.D. schools etc.) are monitored broadly by the conference committee.

CINCO ("CMS Information on Conferences") web pages are provided to CMS members to deal with the handling of conferences and presentations (talks and posters). The list of all CMS conferences is maintained on a central web site. Each conference has a custom-made conference web page that in turn lists presentations and selected speakers, along with other crucial information (links to further information, important dates, etc.). The process of selecting speakers is handled through these web pages by nominating speakers for individual presentations. All available talks are announced to the collaboration, and nominations can be submitted by any CMS member, including "self-nominations" by the prospective speaker. The web pages provide an archive for past presentations as well as the system to prepare future conferences, select speakers, and examine and approve presentations. CINCO is also used for the review of presentations "shared" with other LHC experiments, i.e. one experiment's speaker presenting results for more than one collaboration.

The CINCO web site has been written by CMS member Bolek Wyslouch of MIT. Originally CINCO has been developed in Visual Studio 2008 for ASP.NET 3.5 and written in C#. Input controls that help handling dates and validate inputs were purchased from

www.peterblum.com. The file upload component AjaxUploader was purchased from Cute Soft. CINCO is hosted on an internet information service server maintained at CERN. The back-end database is Oracle maintained by CERN for the CMS collaboration. Several CMS members provided advice and feedback to improve and customize the tool along the years. CINCO was released to CMS on the 5th of May, 2008.

3. Speaker selection procedures

For every talk and poster proposed in CINCO, the speaker selection is usually decided unanimously and by consensus by the conference committee based upon

- Nominations for a presentation
- Information in the CINCO profile, comprised of automatic information from the CMS user database as well as information entered by each member
- Experience of candidates for the talk in question
- General recommendations
- Individual's role in making possible the content of the talk
- General contributions to CMS, including operations, instrumentation, computing, etc.
- Career considerations
- Fair distribution of opportunity (bearing in mind the talk history)
- Personal invitations
- Requirements imposed by conference organizers
- Origin of candidate versus the place of conference, in order to take into account possible travel and visa restrictions.
- Diversity of speakers (regional origin, gender, seniority)
- Formal criteria such as authorship of CMS papers

No formal quota for talks is enforced, nor is there a permanent ordering regarding the importance of individual criteria from the list above. The entire decision process is kept as much as possible within the framework of CINCO and relevant mailing lists, such that decisions can be reproduced and revisited in the future.

In order to keep track of the talk history and ensure a proper rotation and fair distribution of talks, a “rank” variable is defined for every CMS member. For every talk, a score variable S is calculated as: $S = -CT \times TT \times DF$ where CT and TT are parameters identifying the conference and talk type, respectively, as shown in Table 1. The parameter DF represents a decay factor aimed at taking into account the time elapsed after a talk was given. If a talk was given more than one year ago, DF equals $365 / \text{days-since-talk}$.

Table 1 Weights attributed to various types of conferences and talks.

Conference type	Score	Talk type	Score
Major international	2	Invited	1
Medium size	1	Plenary	1
Small / workshop	0.5	Parallel	0.6
CERN seminar	1		
Instrumentation	0		
National meeting	0		
School	0		

In addition, a series of bonus variables are defined. The poster bonus PB equals +0.2 for each poster at any kind of conferences. A postdoc bonus PDB is computed as +0.8 from the third year after the Ph.D. date for 3 consecutive years. A student bonus SB is defined as +0.8 for 2 years before expected Ph.D. completion date. For every new collaborator there is an additional variable NC = -1 during first year after joining CMS.

An overall rank variable is then computed for every CMS member as: $\text{rank} = \sum S + \sum \text{PB} + \text{PDB} + \text{SB} + \text{NC}$, where the two sums extend over all presentations within the past 3 years. The rank then represents an internal metric for the committee to evaluate talk history and ensure a fair opportunity for all CMS members to give talks. Speaking opportunities should be accessible to all interested members of CMS: direct involvement in the creation of the material to be presented is not required, in general, although sometimes special attention is given to those cases where an individual has played a role in making possible the information that is the content of a talk.

Only CMS authors are allowed to give CMS talks: exceptions can be granted by the committee and have to be reported to the collaboration board. CMS members qualify as authors of CMS publications if they spend at least 70% of their research time on the CMS project and fulfill at least 4 months of work on service tasks for the whole collaborations: these include data taking shifts, work on the detectors, on the simulations, on the common software infrastructure and such. Out of the more than 4000 members of CMS, around 2100 qualify as authors of CMS papers.

About 10% of all CMS presentations are by invitation by the conference organizers. In such cases, the invited speaker informs the conference committee about the invitation and the conference committee decides whether the invitation can be accepted and informs the speaker of the (usually positive) decision (via CINCO). The speaker then accepts the invitation and the talk becomes part of the program of the conference. While it is obviously an honor to be invited, and a sign of appreciation, an invited speaker may as well decide to decline and offer the opportunity to other members of the collaboration: the conference committee then searches for a suitable speaker using the usual procedure.

4. Analysis of the history of CMS conference presentations

All of the following data are based on a snapshot of the CINCO database from November 24, 2020. Figures 1 and 2 show the total number of talks and posters given at any kind of conference from 2008 onwards. Separately shown are the number of talks at international and major international conferences, at national meetings, at instrumentation conferences, and the number of posters. The total number of presentations has steadily increased until 2013 and stabilized around 1400. A small drop in 2015 can be associated to the LHC long shutdown 1. Starting from March 2020, as a consequence of the Sars-Covid-2 pandemics, many conferences have been canceled or rescheduled, yielding a drop in the total number of talks, which in the meantime has partially recovered (recorded presentations in CMS exceed 1100 in 2021).

Figure 3 and 4 show the total number of talks and the rank for CMS authors over the last 3 years. On average, every CMS author has given 1.45 talks, and the rank is -0.33. The spikes in the rank distribution at 0 and 0.8 correspond to CMS members who have not given any talk within the time period, and the Ph.D. student / postdoc boni, respectively.

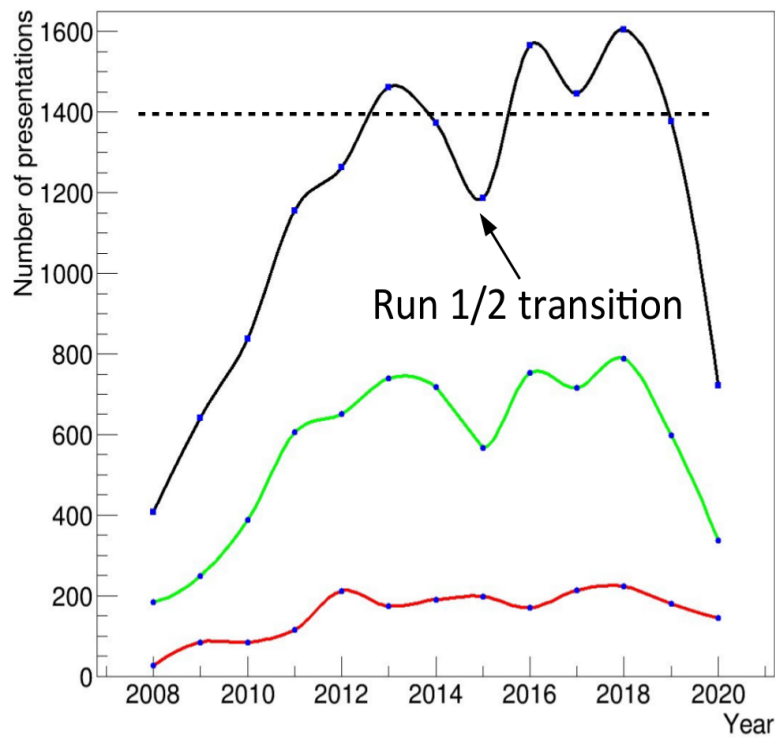


Figure 1 All presentations at any kind of conference are shown in black. Talks at international conferences (excluding instrumentation): green; talks at major international conferences: red.

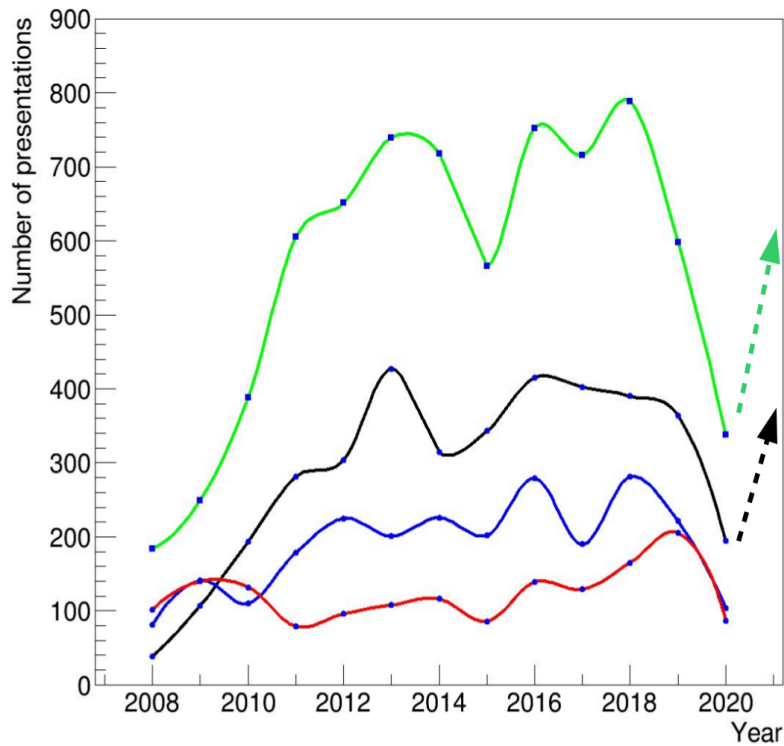


Figure 2 Talks at international conferences: green; presentations at national meetings: black; posters: blue; talks at instrumentation conferences: red.

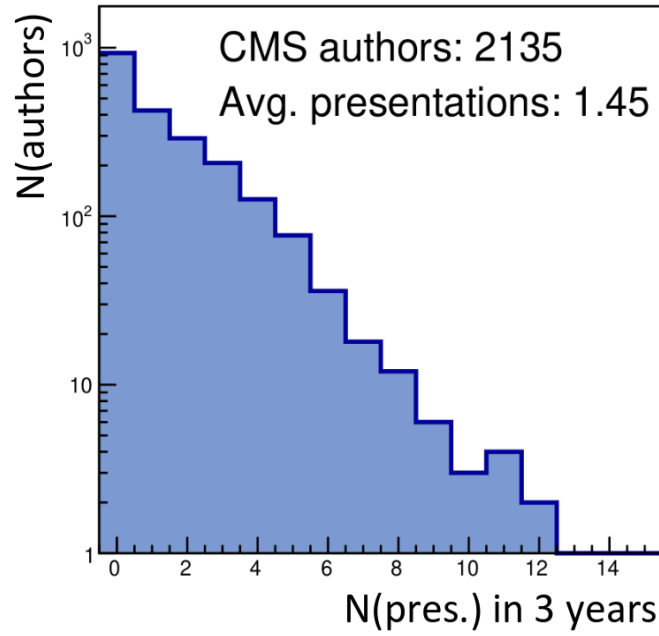


Figure 3 Number of presentations given per CMS member over the last 3 years.

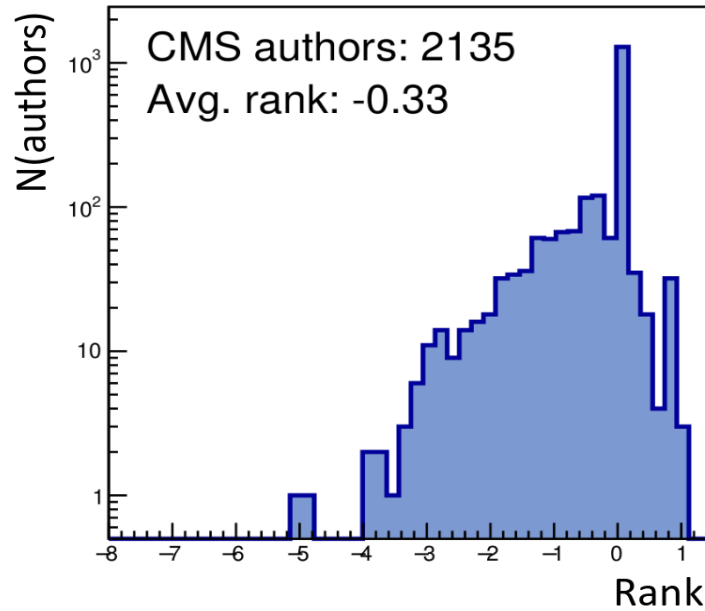


Figure 4 CINCO rank per CMS member over the last 3 years.

Figure 5 and 6 show the rank and total number of presentations separately for male and female CMS authors. Gender representation seems to be adequately guaranteed.

Similar distributions are evaluated based on the career status of CMS members: Ph.D. students, postdocs, non-tenured scientists, and tenured scientists. In general, non-permanent stuff and postdocs give a larger number of presentations, though precise numbers have to be interpreted with care, since the data rely on CMS members actively keeping their CINCO profiles up to date.

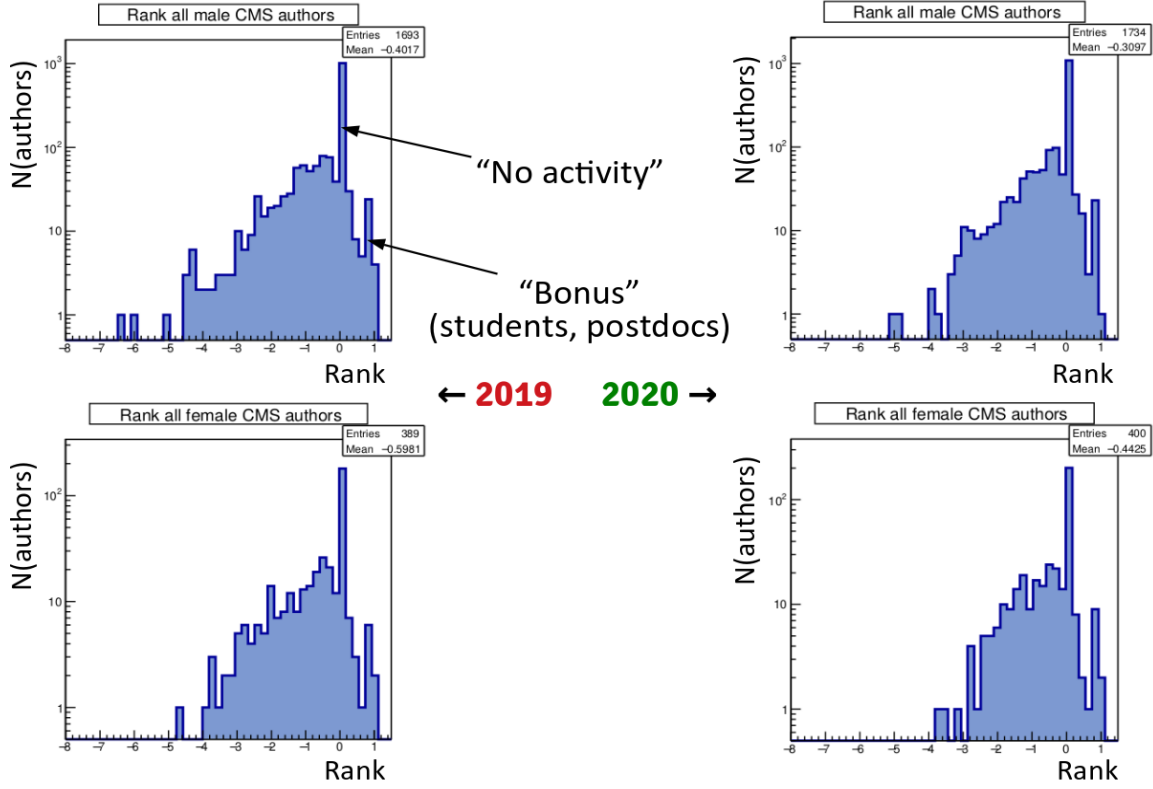


Figure 5 Rank distribution separately for male (top) and female (bottom) CMS authors in 2019 (left) and 2020 (right).

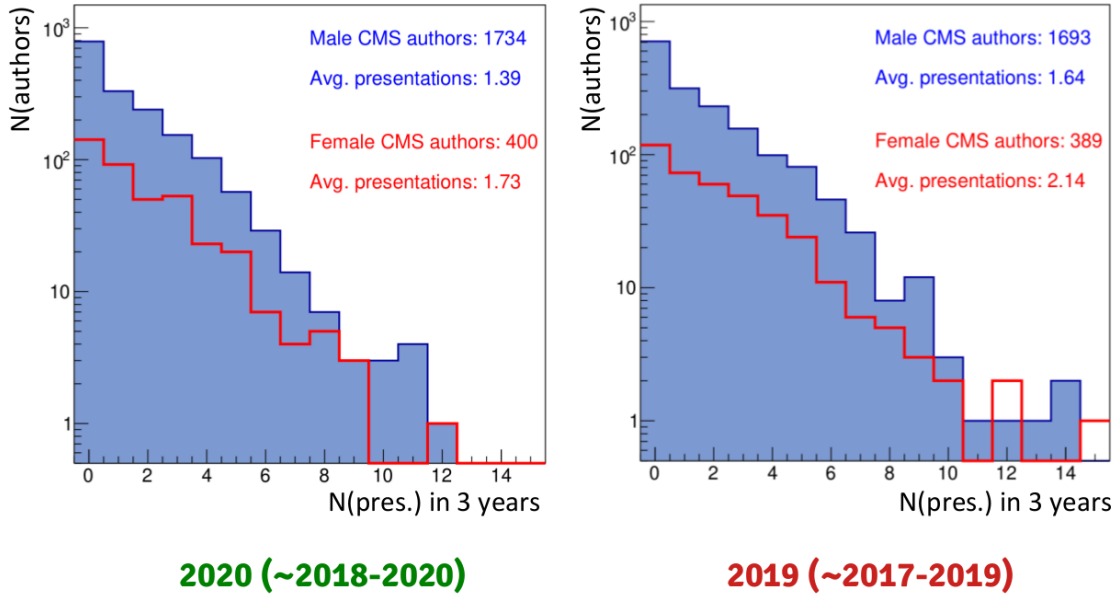


Figure 6 Number of presentations in 3 years for male and female CMS authors as of 2020 (left) and 2019 (right).

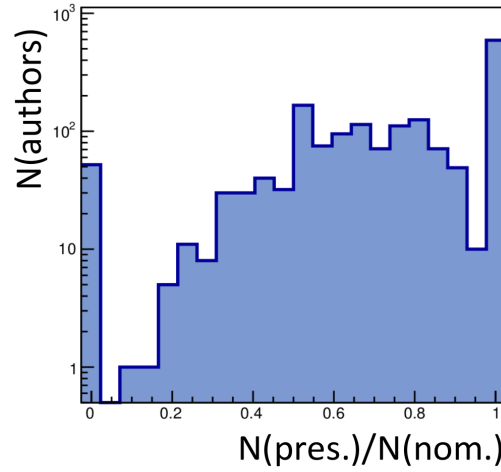


Figure 7 Ratio of the total number of presentations given by current CMS authors and their nominations, using data from about 13 years.

The assignment of talks in CMS strongly relies on nominations. Using data from all ~ 13 years available in CINCO, Figure 7 shows the ratio of the number of presentations given by any current CMS author to the number of nominations. On average there is a rate of around 75% of selection after a nomination, indicating that the implemented system indeed guarantees proper opportunities to give talks to all CMS members. For major conferences, the rate is somewhat lower but still above 50%.

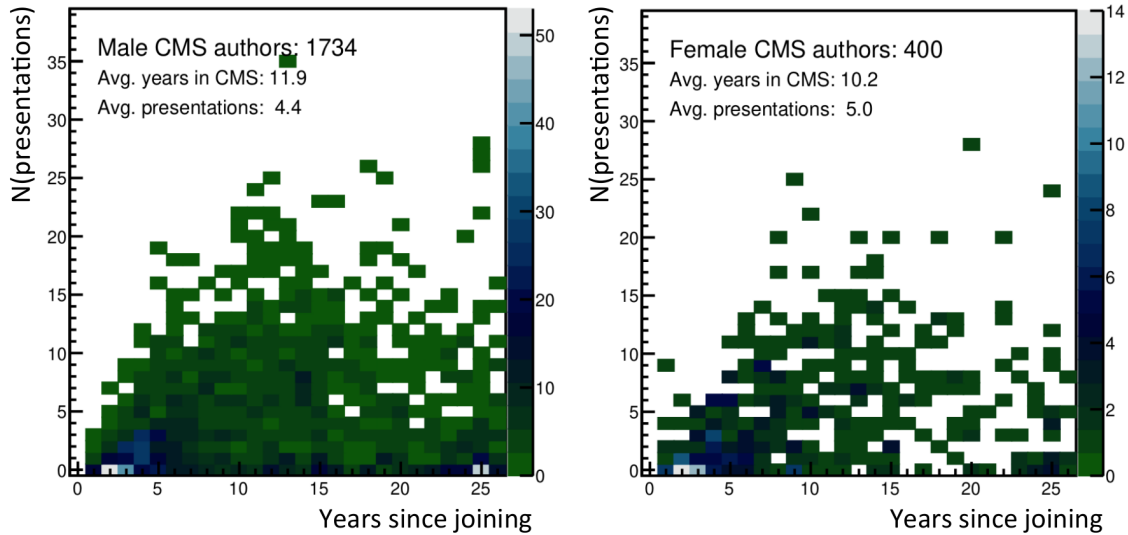


Figure 8 Number of presentations per year as member of CMS, for male (left) and female (right) authors.

Figure 8 shows the number of presentations given as a function of the number of years spent in the CMS collaboration, separately for male and female CMS authors. The number of CMS authors without any recorded presentation is around 500. The number of long-term authors, joining the collaboration in 2010 or earlier, without any presentation is ~ 250 (227 male, 21 female). These numbers have slowly declined in recent years.

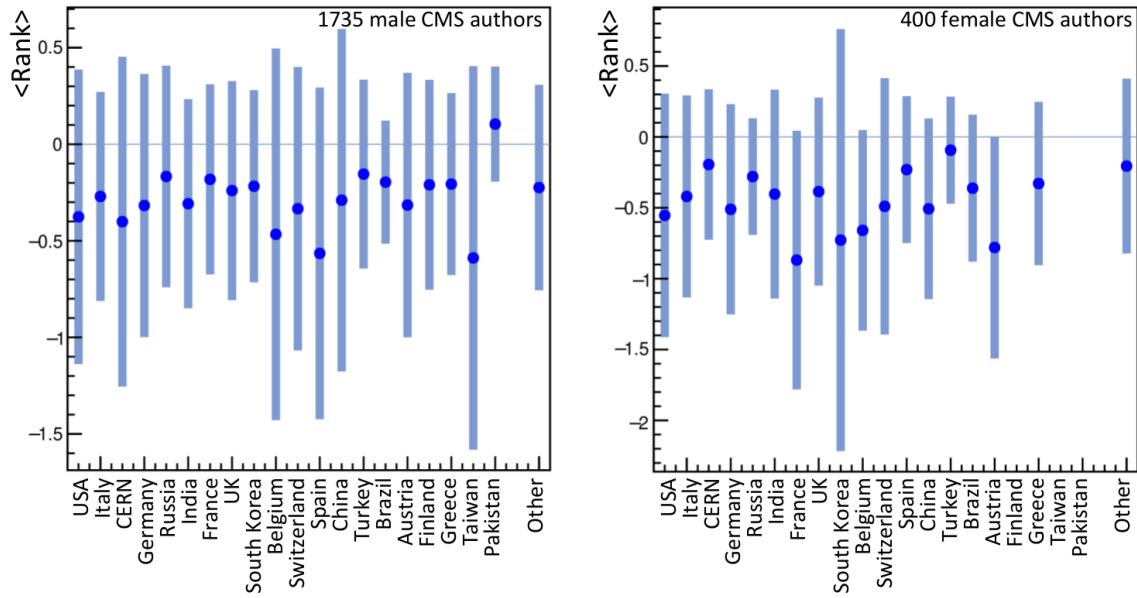


Figure 9 Average rank per country of institution, separately for male (left) and female (right) current CMS authors, with the spread indicated by vertical bars.

Geographical balancing, based on the location of institutes a CMS member is affiliated with, is monitored on a regular basis. An example is shown in Figure 9, where the average rank for authors as a function of the nation of their institution is displayed. Because of its special status, CERN is shown separately. When making comparisons, it is important to consider also differences among regions such as age structure, career paths etc.

5. Conclusions

Ensuring the highest quality representation of the collaboration at conferences and at the same time guaranteeing fair opportunities to all members to give talks has been achieved by the CMS collaboration via a largely centralized organization. Analyzing an unprecedented sample of presentations over 13 years, the CMS collaboration can provide an example of a procedure that satisfactorily ensures all members to have equal opportunities to give presentations regardless of gender, seniority, and country of origin, and providing proper priority to those with a non-permanent position and in search for positions or career advancements.

6. Acknowledgements

I would like to thank the NuFact 2021 organizers for making possible the plenary session on diversity, outreach and education. Thanks to all present and past members of the CMS conference committee for their invaluable contributions, and in particular to Silvano Tosi for the original idea for this presentation.