

The CMS Experiment

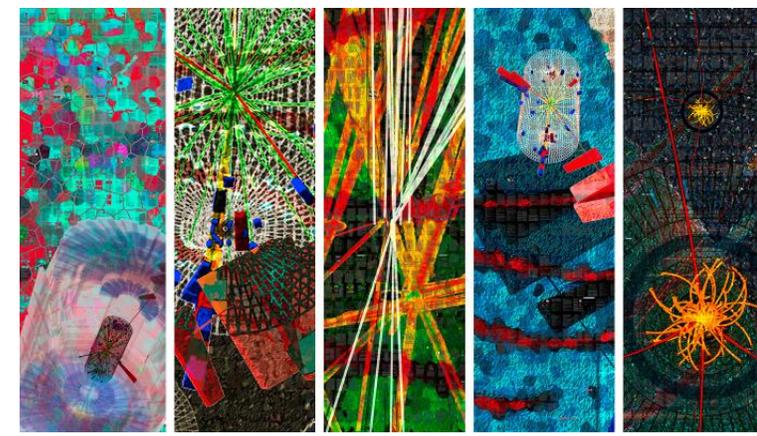
- <https://cms.cern/>
- <https://cms.cern/collaboration>
- The CMS Collaboration brings together members of the particle physics community from across the globe in a quest to advance humanity's knowledge of the very basic laws of our Universe. CMS has over 4000 particle physicists, engineers, computer scientists, technicians and students from around 200 institutes and universities from more than 40 countries.
- The collaboration operates and collects data from the Compact Muon Solenoid, one of the general-purpose particle detectors at CERN's Large Hadron Collider. Collaborators from all over the world helped design and fabricate components of the detector, which were brought to CERN for final assembly. Data collected by CMS are shared with several computing centres via the Worldwide LHC Computing Grid. From there, they are distributed to CMS institutions in over forty countries for physics analysis.
- In keeping with CERN's commitment to open access for high-energy physics, the scientific results from CMS are shared openly with the world.

Outline

- **Mandate of the CMS Diversity Office**
- **Promoting Diversity in CMS**
- **Promoting Diversity in U.S. CMS**
- **Diversity Statistics**
 - Focus will be to present the statistics for U.S. CMS within the context of CMS
- **Women's Forum.**

Mandate

- **Goal of the CMS Diversity Office (DO):**
 - To foster a working environment where all members of the Collaboration can thrive and bring in their talents, irrespective of age, career status, employment situation, institutional affiliation, geographical location, nationality, gender, ethnicity, family situation, sexual orientation, or disabilities
- **Mandate:**
 - advise management and individuals on diversity related matters
 - propose actions to promote diversity and create awareness
 - monitor and record statistical information related to diversity
 - actively listen to Collaboration members' concerns
 - report regularly to the Collaboration about status and progress of diversity-related issues
 - collaborate with relevant bodies outside CMS such as the CERN Diversity Office if required
- **DO approved in April 2017 and its full membership approved December 2018**
 - 2 Co-Chairs and nine members
- **CMS DO is a body of the Collaboration Board.**
 - E-groups:
 - Diversity Office chairs: cms-diversity-office-chair@cern.ch
 - Full Diversity Office membership: cms-diversity-office@cern.ch



PROMOTING DIVERSITY IN CMS

CMS Code of Conduct

<https://cms-docdb.cern.ch/cgi-bin/PublicDocDB//ShowDocument?docid=13847>

CMS Code of Conduct

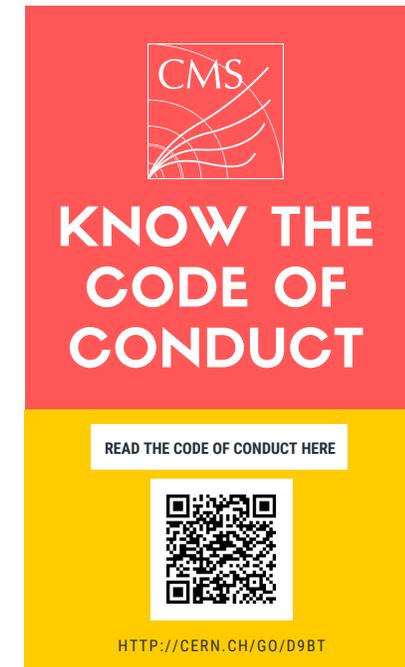
Approved by the CMS Collaboration Board 12-April 2019

The CMS collaboration consists of members with varied national origin, ethnic background, race, gender identity, sexual orientation, gender, age, physical ability, and religion. As a community, we are committed to being positive and inclusive in all regards.

We follow the [CERN Code of Conduct](#). Members of CMS must maintain a professional environment in an atmosphere of tolerance and mutual respect and abstain from all forms of harassment, abuse, intimidation, bullying, and mistreatment of any kind. This includes, but is not limited to, intimidation, sexual or crude jokes or comments, offensive images, and unwelcome physical conduct. Members must keep in mind that behavior and language deemed acceptable to one person may not be to another.

We commit to helping our community adhere to this code of conduct and speak up when we see possible violations of it. We strive to treat those outside of CMS as we would members of our own community. In the event that the letter or the spirit of this code has been violated, appropriate action will be taken, up to and including procedures specified in Annex A3.2 of the CMS Constitution.

Carry it with you at all times



Topical Discussion

- We plan to highlight one important topic at each “CMS Collaboration Week” (4 times a year at CERN + 1 outside)
- April 2019 CMS week - organized talk and discussion on “Unconscious Bias”:

- Prof. Juliane Degner (Hamburg)

“I’m the least sexist person: why it is misleading and dangerous to believe that you are free of prejudice”

- open to entire CERN community
- Talk was very well attended and a topic of discussion throughout that week
- Webcast available (for at least one year after)
 - <https://cds.cern.ch/record/2670668>
- June 2019 CMS week - discussed “Imposter Syndrome”:
 - Open to CMS members only
 - Discussion used experiences from within the CMS community
 - collected anonymously prior to the discussion
 - An engaging and thoughtful conversation

"I'm the least sexist person..."

WHY IT IS MISLEADING AND DANGEROUS TO BELIEVE THAT YOU ARE FREE OF PREJUDICE

Talk by Prof. Juliane Degner
(Universität Hamburg)

11:30 -12:30
8 APRIL
CERN COUNCIL CHAMBER

<https://indico.cern.ch/event/810386/webcast-available>

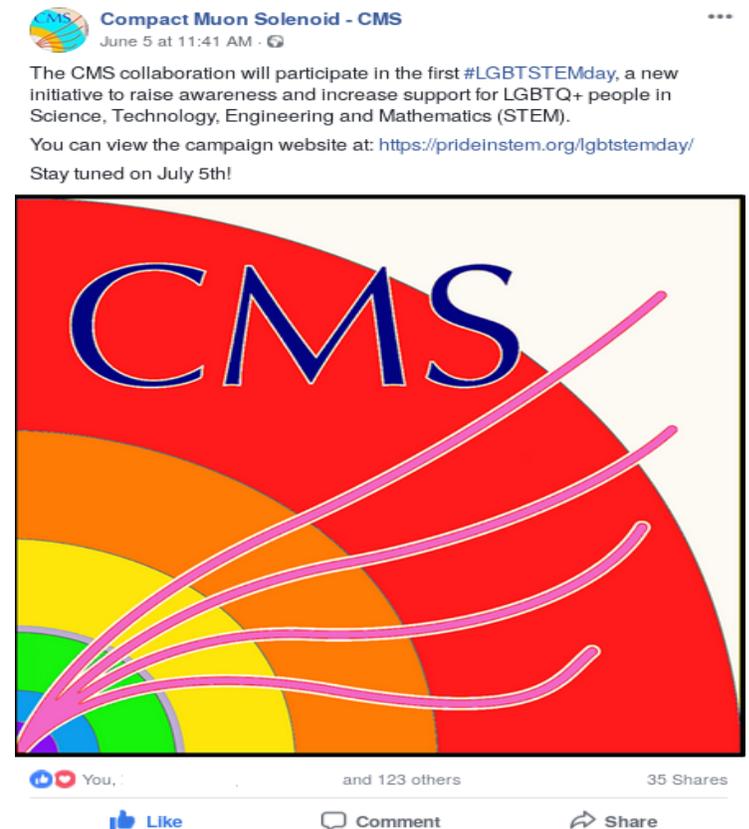
CMS

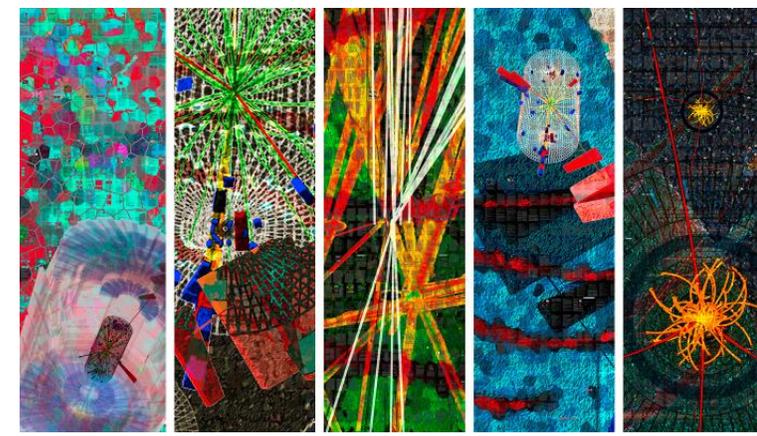
Topics of interest

- **Discussion with CMS management**
 - Management: spokesperson, deputies, L1 coordinators and L2 conveners
 - Exchange views, discuss various aspects, on diversity and inclusion
 - Plans and strategies to promote E&I within their groups
- **Connect with diversity contacts from other experiments and CERN**
 - Share experiences
 - understand issues which are common to all of us and we can work together to solve
 - e.g Unconscious bias and Leadership training
 - Challenges to be worked upon with CERN – some examples
 - Name Change after marriage.
 - Identity info in CERN database (M/F)
 - For example, not sure how to handle a colleague joining while transitioning.
- **Organize CMS to support and participate in LGBTQ+ STEM day (2018, 2019)**

International “LGBTQ in STEM” day: July 5

- **Main goal is to raise awareness about survey findings for LGBTQ+ individuals in science**
 - Support of CMS in International Day for LGBT in STEM shows the goodwill of the collaboration in promoting an healthy environment.
- **Actions by CMS:**
 - Being listed as a supporter on the website <https://prideinstem.org/lgbtstemday>
 - Participate in spreading the word and help the day gain momentum and become truly international.
 - Prepared a “rainbow” version of our CMS logo
 - We tweeted and posted on June 5th, 2018 to announce our participation.
 - Pledge to share our support on social media on the July 5th, 2018 and 2019 and plan to continue every year,





PROMOTING DIVERSITY IN U.S. CMS

U.S. CMS Diversity, Equity and Inclusion Committee

- **Mandate – based on CMS and CERN, tailored for USCMS**

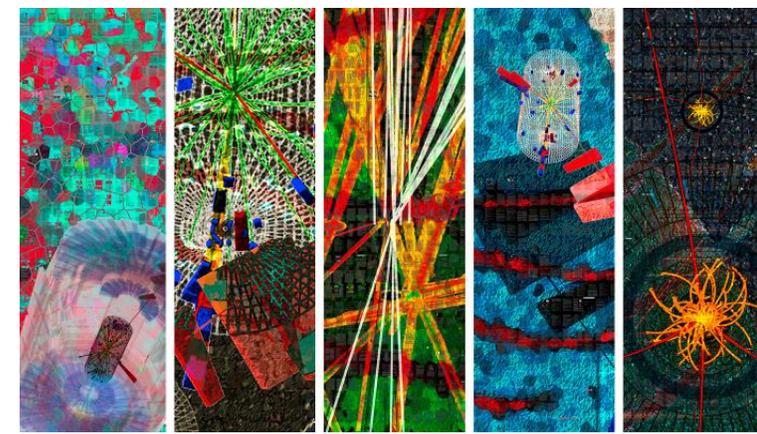
- Advise USCMS management and individuals on diversity related matters.
- Propose, support, and implement actions to promote diversity and create awareness.
- Monitor and record statistical information related to diversity.
- Actively listen to USCMS Collaboration members' concerns.
- Report regularly to the USCMS Collaboration about status and progress of diversity-related issues.
- Establish internal and external networks to gather input and align to best practice.

- **Example Action items**

- Arrange USCMS site visit by the APS committee on the Status of Women in Physics to evaluate the environment.
- Start a matched mentorship program.
- Strive for balanced nominations and representation of groups in USCMS (projects, operations, managements, and others).
- Define and monitor key performance criteria for USCMS.
- Work with universities and societies (APS, NSBP, etc.) to increase representation (recruitment and retention of graduate students, postdocs, and faculty)

U.S. CMS discussion: concerns & suggestions

- **“Group think” -- thinking about diversity should help us avoid this aspect of collaboration**
 - Possible action: provide resources on in-group/out-group thinking, intergroup dialogue?
- **Lack of family-friendly time schedules (meetings, total work hours), “ignore your family for success” perception**
 - Possible action: provide support (via mentor?) for people who feel pushed out by their family needs
- **Supporting our undergraduates: be there, check in, encourage wellbeing and group work**
 - Possible action: mentoring could provide a way for students to have someone check in if it’s difficult at the university with many students and few supervisors.
- **Promote Leadership opportunities which are family friendly, teaching schedule friendly, etc.**
 - Possible action: advocate for more remote leadership opportunities
- **HEP groups could use guidelines for less-biased searches (race, gender, previous association)**
 - Possible action: provide guidelines (website/Twiki).
- **Pipelines to and through graduate school for HEP students that enter undergrad at a disadvantage.**
 - Needs more discussion! This idea was distinct from initiatives like the APS Bridge Program.
- **Working with science students even before college: CMS outreach programs, Ohio State ideas for middle school and high school students**
 - Possible action: gathering point for young-student outreach opportunities in USCMS (website/Twiki)



DEMOGRAPHICS

One of the mandates of the Diversity Office is to:

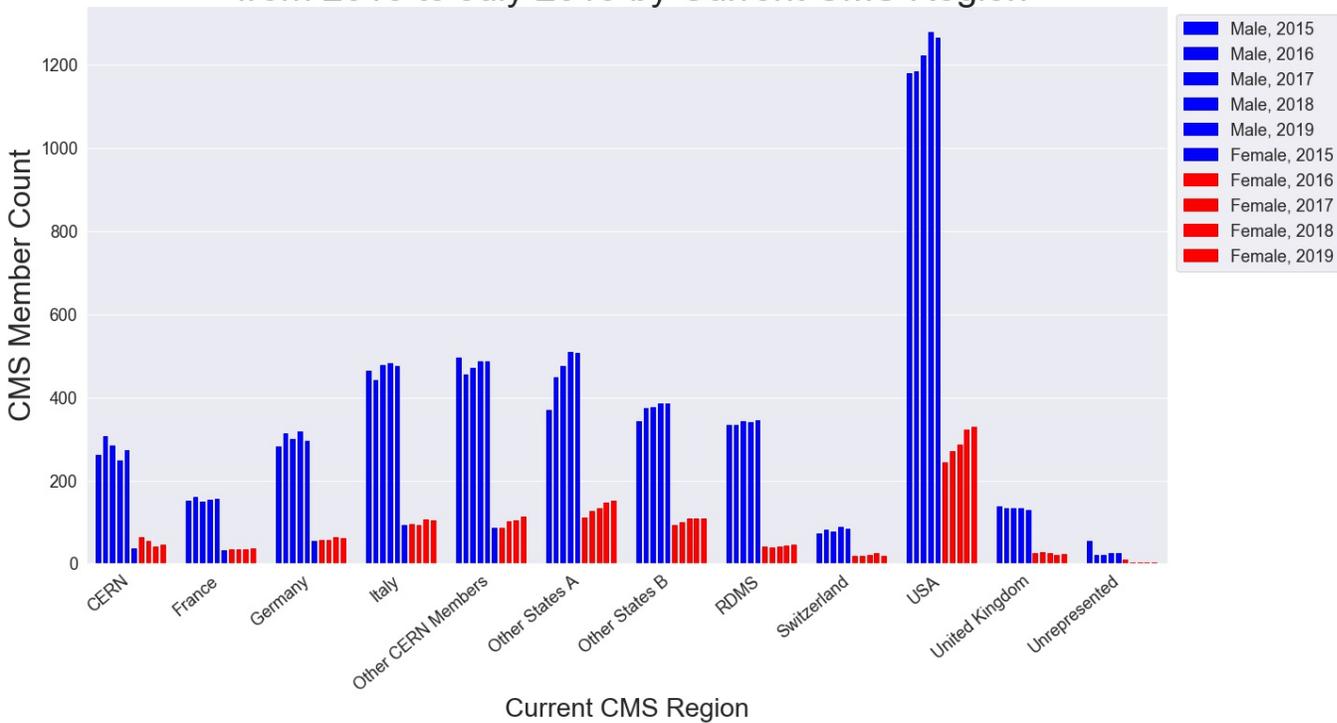
monitor and record statistical information related to diversity

A look at data –demographic historical trends

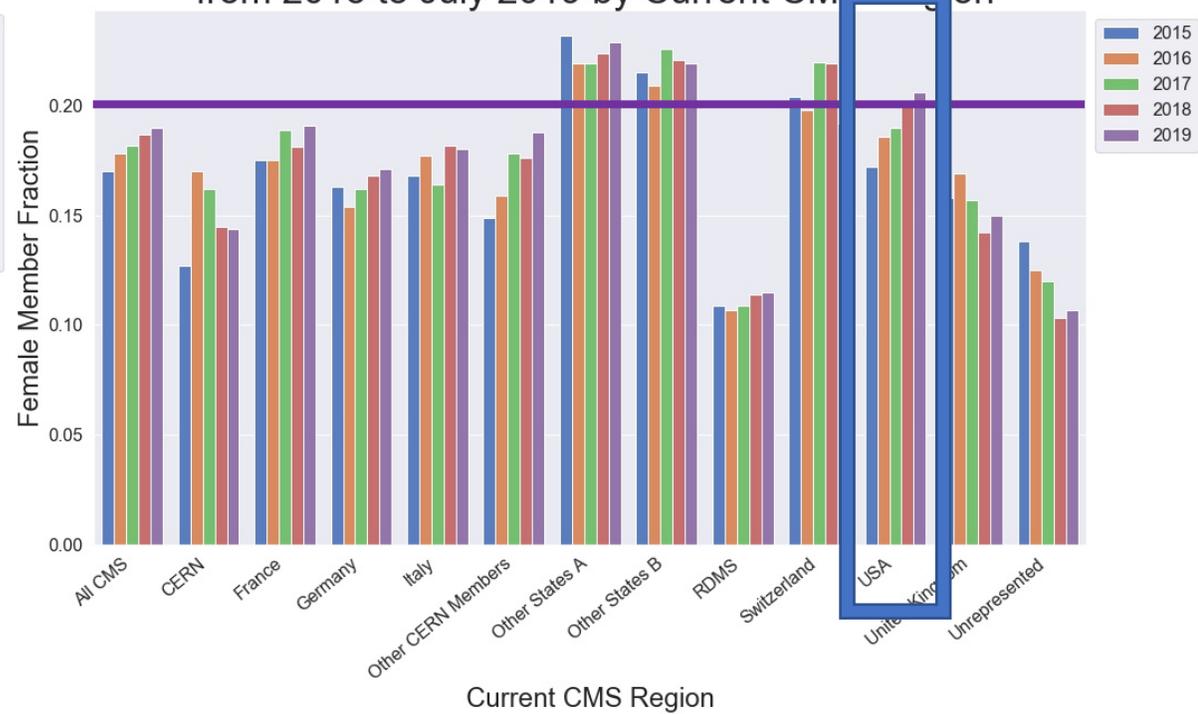
CMS Demographics

- Trends in CMS membership by region, and gender

Yearly CMS Member Counts by Gender from 2015 to July 2019 by Current CMS Region



Yearly Female Member Fraction from 2015 to July 2019 by Current CMS Region



Other CERN members: Austria, Belgium, Bulgaria, Finland, Greece, Hungary, Poland, Portugal, Serbia, Spain

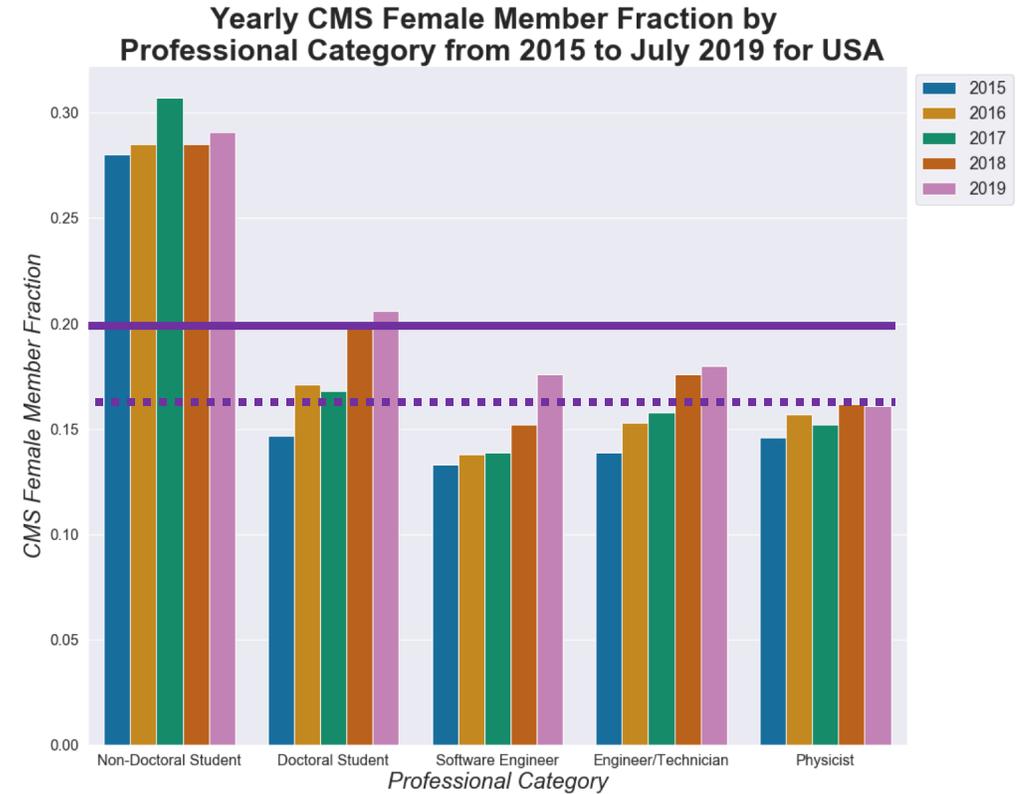
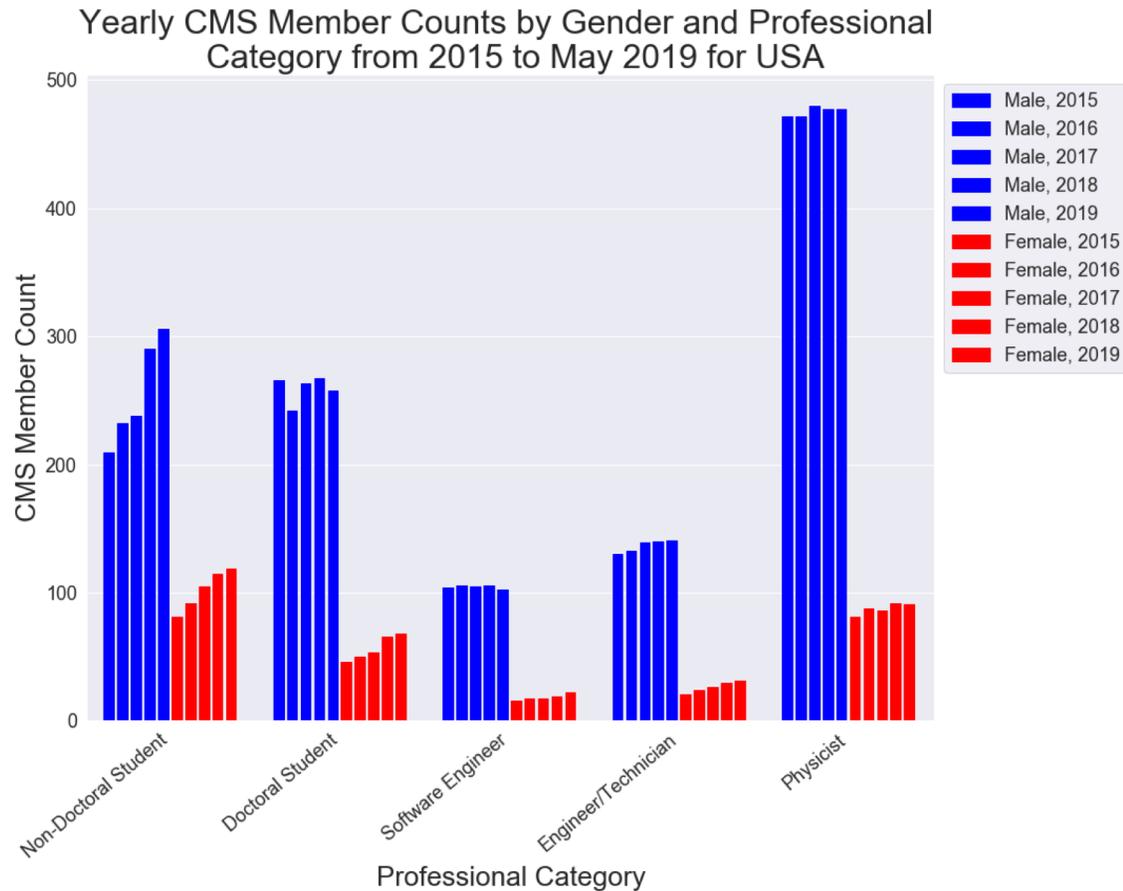
Other States A: China, India, Iran, Korea, Malaysia, New Zealand, Pakistan, Sri Lanka

Other States B: Bahrain, Brazil, Colombia, Croatia, Cyprus, Ecuador, Egypt, Estonia, Ireland, Kuwait,

Lebanon, Lithuania, Mexico, Montenegro, Oman, Qatar, Saudi Arabia, Turkey, Ukraine

U.S. CMS Demographics

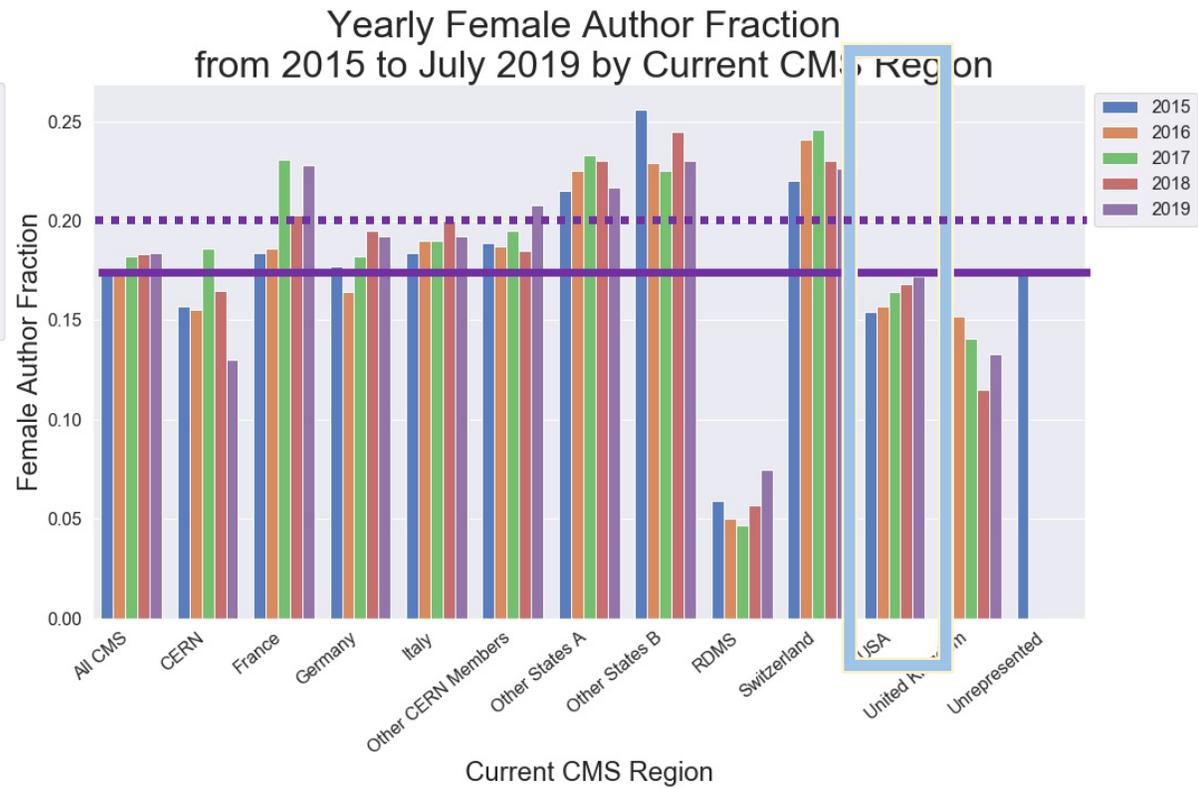
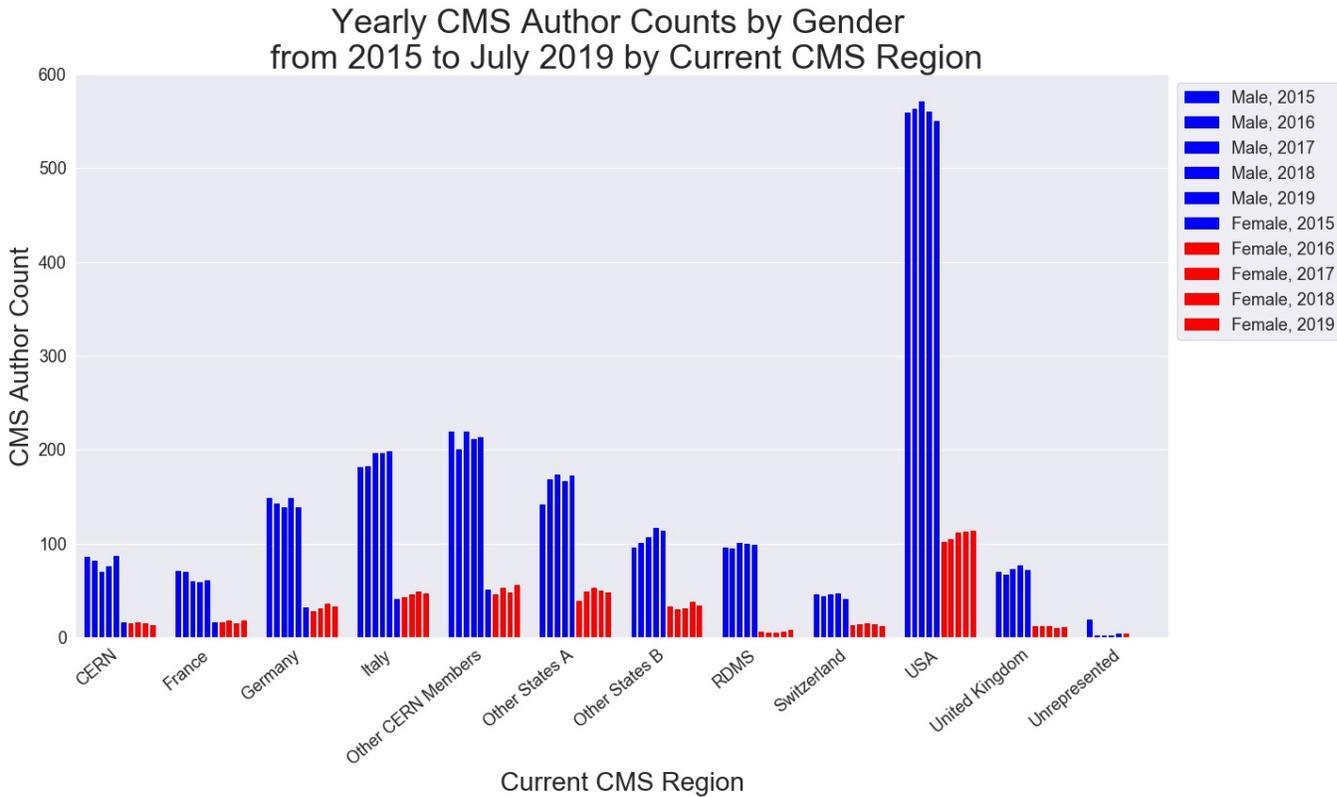
- Trends by professional status for U.S. CMS



Female member fraction U.S. CMS Physicists:
 Postdocs: 25±4%
 Junior (faculty + researchers) : 30±7%
 Senior (faculty + researchers) : 12±2%

CMS Demographics for Authors

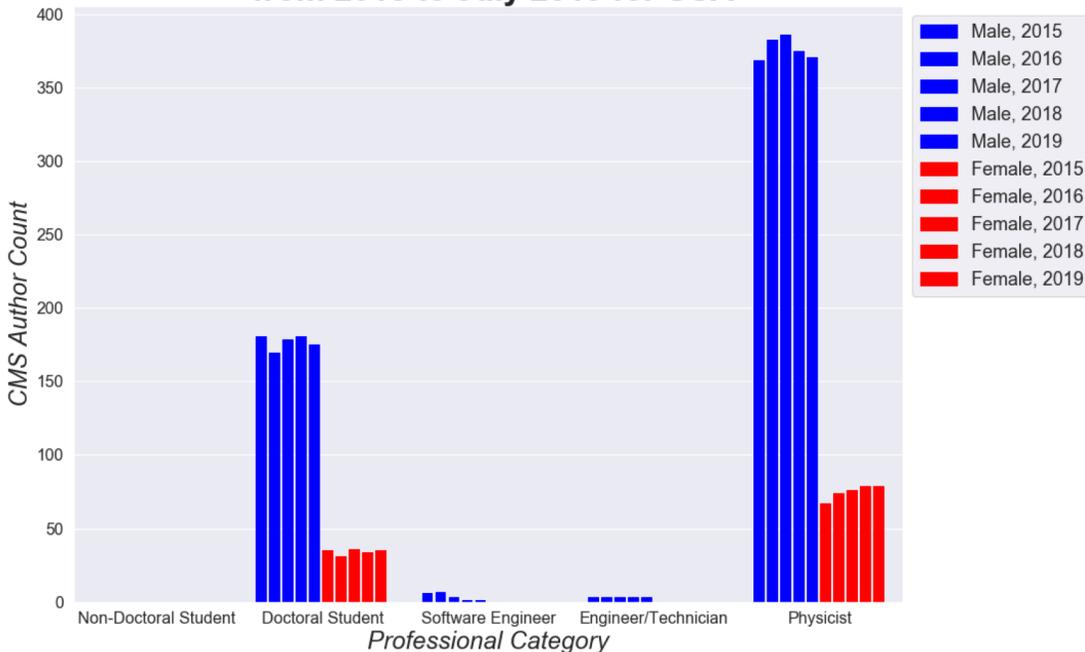
- Trends in CMS membership by region, and gender



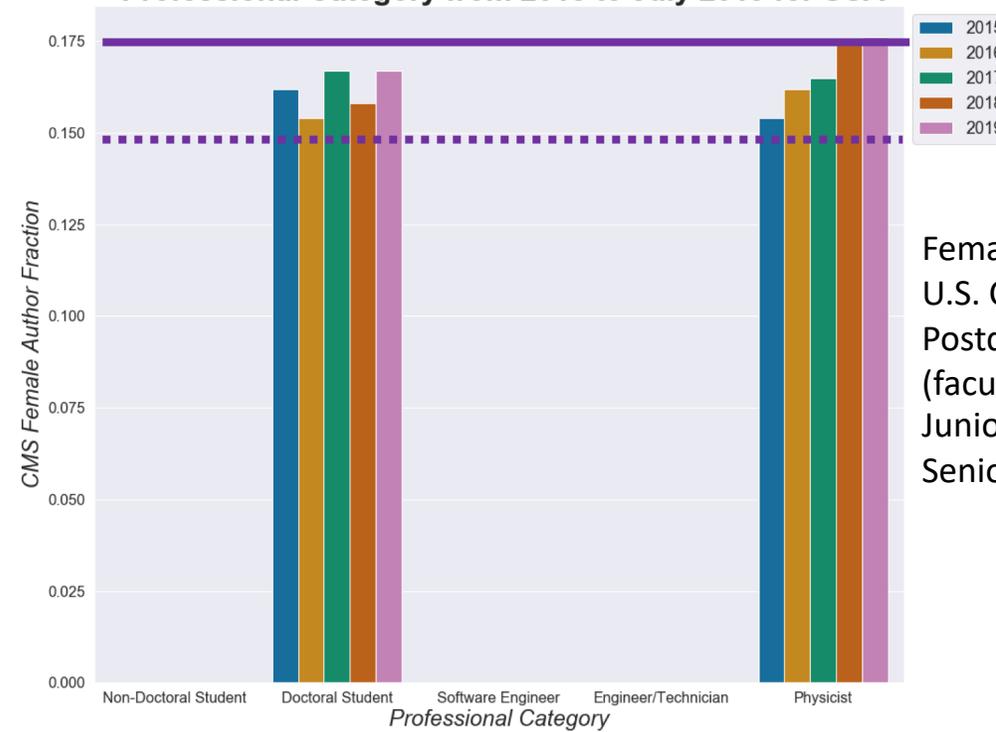
U.S. CMS Demographics authors

- Trends by professional status for U.S. CMS authors
- Most authors are doctoral students and physicists.
- No female “standing” authors in the technical and non-doctoral categories.
- Depending on their contributions, any member maybe added as authors for selected papers.

Yearly CMS Author Count by Professional Category from 2015 to July 2019 for USA



Yearly CMS Female Author Fraction by Professional Category from 2015 to July 2019 for USA



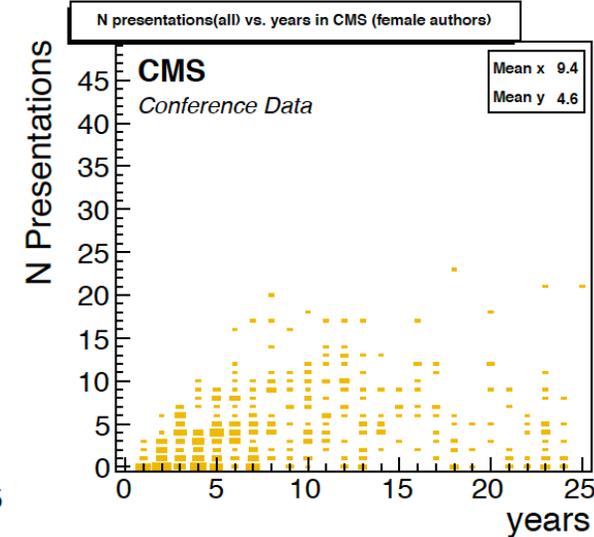
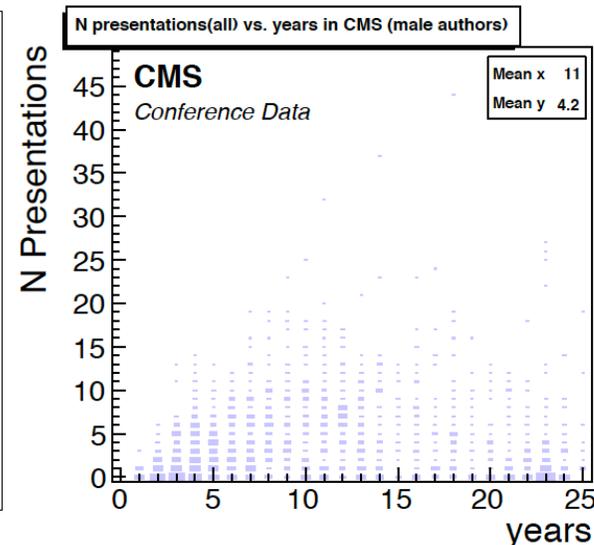
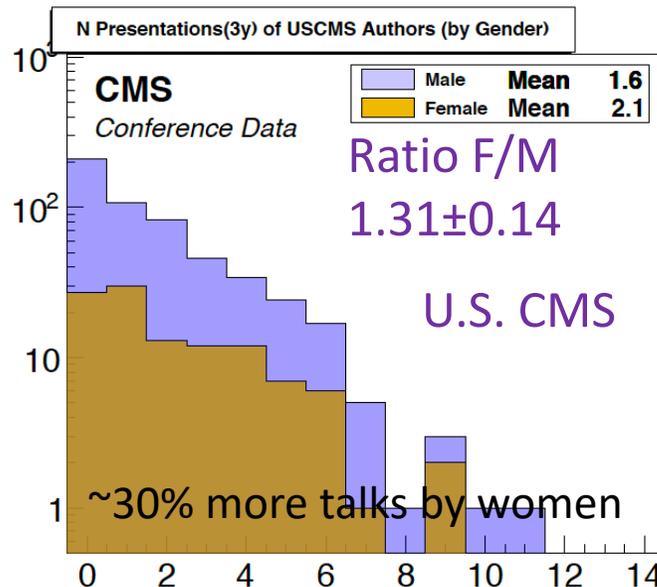
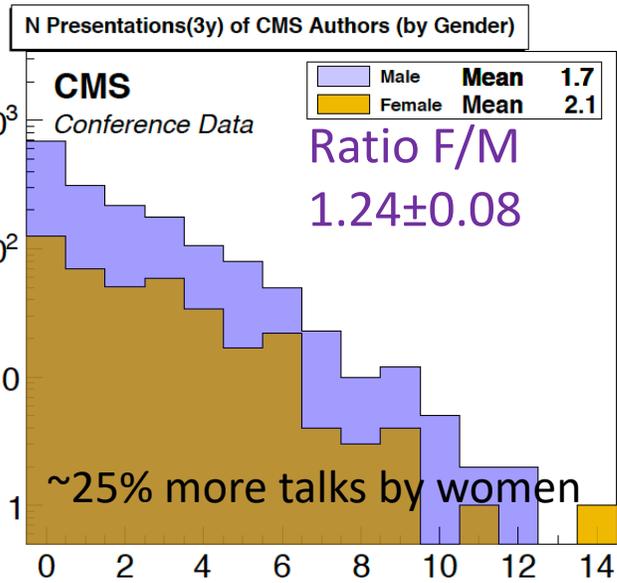
Female author fraction
 U.S. CMS Physicists:
 Postdocs: 23±4%
 (faculty + researchers):
 Junior: 35±10%
 Senior: 12±2%

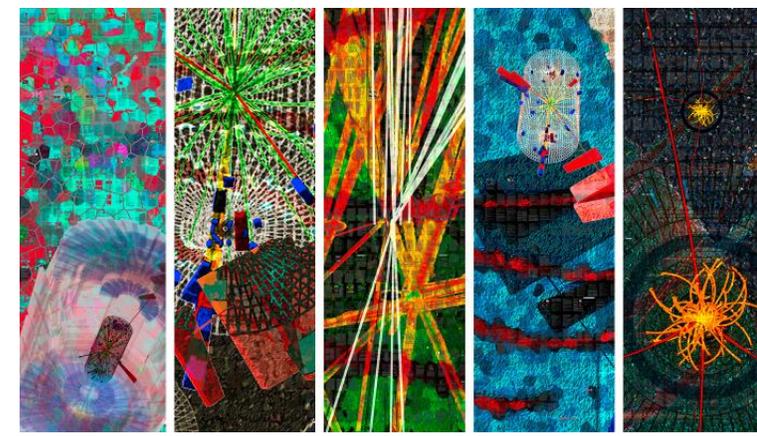
Conference presentations

- **CMS Conference committee is proactive in ensuring regional balance and diversity during talk allocations.**
 - Usually reasonable, with some downward outliers (often financial reasons)
- **Diversity is not in conflict with the goals of best possible speakers and a fair distribution of opportunity.**
- **Monitoring (and acting upon)**
 - Regional / institutional balance (globally, and also for major conferences)
 - Career stage: student vs. postdoc vs. nontenured vs. tenured
 - Gender
- **Additionally, in cases of harassment at conferences, the committee has a contact person and does follow up and takes or recommends appropriate action.**

Statistics related to conference talks

- **Summary - Statistics indicates equitable treatment for men and women at a given stage of career, both in CMS and U.S. CMS**
- **Nomination is required to become a speaker**
 - Possibility of biases in the pool of available speaker candidates
- **A eligibility “rank” is computed using the past history of talks (number, conference and talk type) with a bonus for postdoc and student status.**
 - Rank is a way to condense talk history into a single number → unbiased estimator
- **Speakers are never assigned by “rank” alone.**





CMS WOMEN'S FORUM

CMS Women's forum

- A grassroots forum to discuss issues for women in CMS
- **Needs:** While some of the topics discussed may pertain to everyone (all regions, career stages, genders etc), but their impact and pointers on how to respond to them are at times very different for women (and also may vary by geographical region and culture).
- **Format:** An open dialogue among all participants
- **Audience: open to all**
 - two initial organizational meetings were closed and helped us self-evaluate our needs and goals.
- **Meet during CMS week**

CMS Women's forum

- **Topics discussed are collected by discussion with colleagues.**
 - Assess working environment using “yellow sticky notes” activity
 - Focus on sharing “One thing I like in CMS - one thing I would like to change within CMS”
 - Categories: family friendliness in CMS — collegiality in CMS — professional mentorship — career advice — hurdles if any in attending meetings at CMS — biases if any — microaggressions — publication — analysis groups — leadership opportunities — any other thoughts...
 - Collated into document shared with everyone and discussed it again at a follow up meeting.
 - Presented the document to the CMS Management board
 - Micro aggressions
 - Shared experiences anonymously at the start of the meeting and discussed a few random ones.
 - Collated into document shared with everyone and discussed it again at a follow up meeting.
 - Sexual harassment – APS article
 - Developing a plan for organizing a session on diversity/harassment
 - Mentoring program (still in the works)
 - what are the wishes,
 - how is it handled in the institutes,
 - ideas on how to organize in CMS
 - forms for finding matches etc.
 - Advancing our Careers:
 - Discussion on how to apply for leadership positions
 - nominations for awards

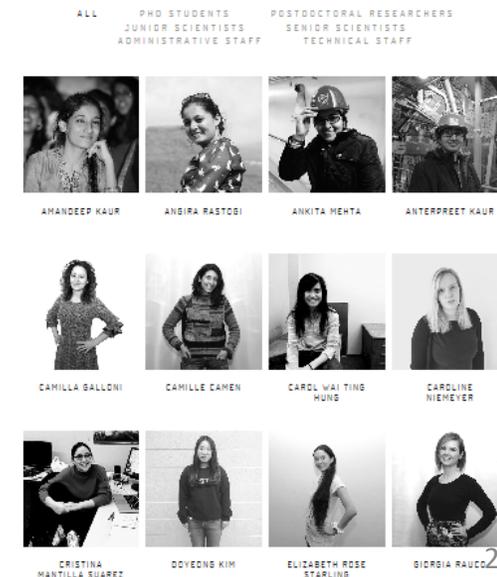
Promoting International Womens Day

- **Our goal: Celebrate women in Physics**

- Highlight women in Physics and in CMS as role models
- inspire young girls to pursue science by showing some of nice stories of CMS Women

- **IWD 2018:**

- Grass roots effort to collect photos and quotes for collages with women in eight categories: PhD students, Master students, Postdoctoral fellows, Undergraduate students , Junior scientists, Senior scientists, Administrative staff, Technical staff
- Photo Gallery on the public CMS web page with the portraits of women in CMS including captions with individual statements: <https://cms.cern/photo-gallery>
 - Super-useful picture gallery provided by CMS women & engagement office/supported by CMS outreach office – wonderful resource for the future
- Posting some portraits during the day in different media (twitter, facebook, Instagram,...)
- Lessons Learned:
 - Our stories/good quotes got lost in the collages, though the information is on the website.
 - Need to figure out how to best use social media to get the stories across.
- Take it to the next step by highlighting the stories:
 - For example, some CMS women, in their quotes, said they pursue science because their teacher proposed this as one of many possibilities and they chose the option and are happy about it - which is maybe not as glorious as a statement “I have been dreaming about becoming a scientists ever since...” but it’s honest and (more importantly) it’s helping young girls to see that they can become scientists even if they are not dreaming about it.



Facebook:

- 1st post with ALL CMS women collage was the most popular (shared by CERN and Fermilab) - 44.7k views
- Other CMS posts had not exceed ~2K views prior to March 8, 2018

The image displays three screenshots of Facebook posts from the 'Compact Muon Solenoid - CMS' page, dated March 8, 2018. Each post features a collage of women's portraits and text about the percentage of women in the CMS collaboration.

- Post 1 (Left):** Posted at 8:00am. Text: "#CMSwomen make up 19% of the CMS collaboration and work on all aspects of the experiment. 17% CMS #physicists with a doctorate are women! Find out more about them: <https://cms.cern/photo-gallery> #IWD2018 #WomenInScience #WomenInSTEM". The collage shows 24 individual portraits of women.
- Post 2 (Middle):** Posted at 5:00am. Text: "#CMSwomen make up 19% of the CMS collaboration and work on all aspects of the experiment. 23% of CMS #PhD students are women! Find out more about them: <https://cms.cern/photo-gallery> #IWD2018 #WomenInScience #WomenInSTEM". The collage includes the CMS logo, a photo of a woman in a lab coat, and 24 individual portraits.
- Post 3 (Right):** Posted at 10:00am. Text: "#CMSwomen make up 19% of the CMS collaboration and work on all aspects of the experiment. 17% CMS #physicists with a doctorate are men! Find out more about them: <https://cms.cern/photo-gallery> #IWD2018 #WomenInScience #WomenInSTEM". The collage shows 24 individual portraits of women.

Each post includes interaction buttons for 'Like', 'Comment', and 'Share'. The rightmost post shows 96 reactions and 19 shares.

Twitter:

- reached 88k people who read the tweet
 - including 150+ retweets, 300+ link clicks and 300+ likes.
- Note that 71% of the reached audience is under 18, and 25% are women.
 - Thus we reached 16k women under 18!

The screenshot shows a Hootsuite dashboard for the Twitter account @CMSExperiment. The main feed displays several tweets related to International Women's Day (IWD2018) and Women in STEM. The top tweet is from @Physicist (@PhysicistFacts) mentioning @CMSExperiment. Below it is a tweet from @CMSExperiment CERN (@CMSExperiment) with a 'CMS women' graphic and a photo gallery of women. Other tweets include mentions of @Lesya (@lesyaah), @Petra Van Mulders (@PetraVanMulders), and @ATLAS Experiment (@ATLASExperiment). The dashboard also shows sections for Mentions, Retweets, New Followers, and various search filters like #CMSWomen and #WomenInSTEM. The browser tabs at the bottom show multiple instances of the CMSWomen photo gallery.

International Women's Day 2019

A balanced world is a better world. 🏛️🌍 ... See more

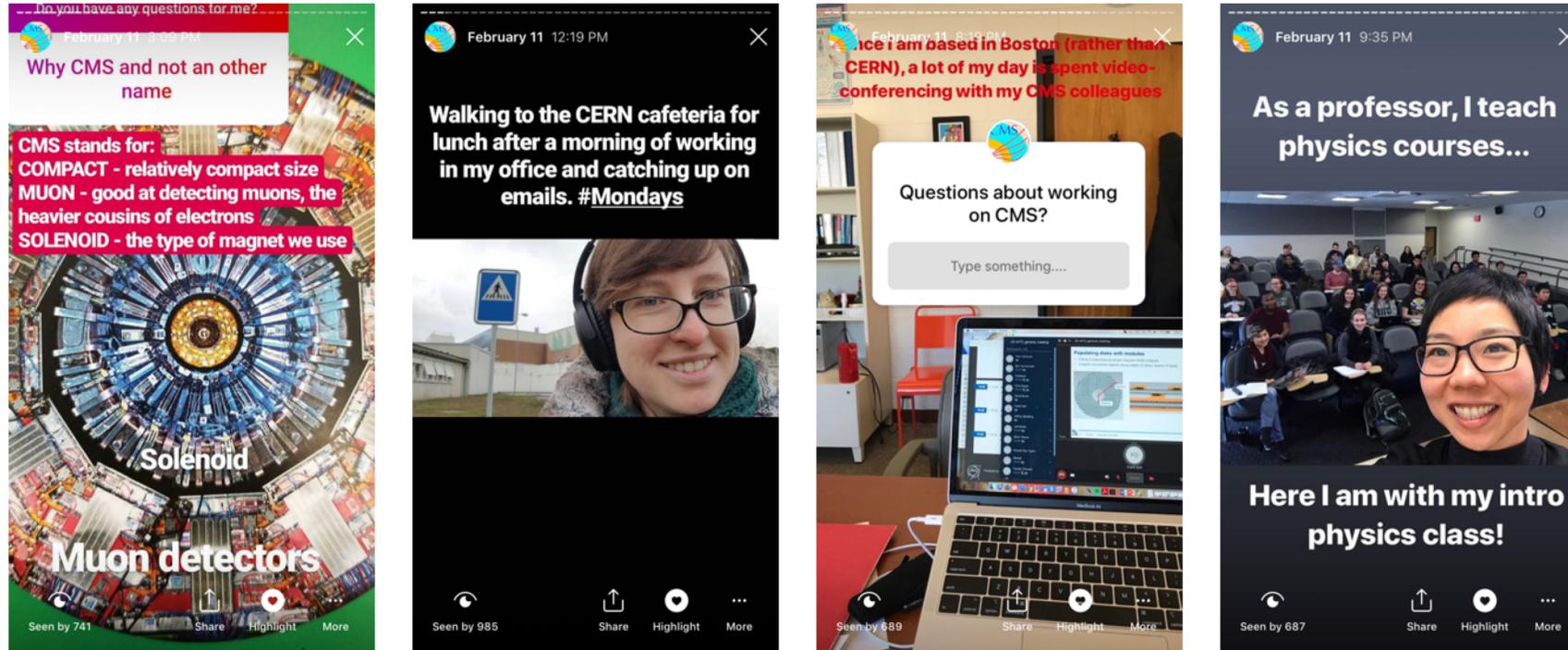
THANK YOU TO ALL WHO SENT THEIR PICTURE!



Video with CMS #BalanceforBetter messages (collected throughout Jan/Feb)

- <https://www.facebook.com/CMSexperiment/videos/243235446476106/> - 8k reach
- <https://twitter.com/CMSExperiment/status/1104065996518838272> - 5k reach

International Day of Women and Girls in Science - Instagram



Two of our colleagues took over the CMS Instagram on 11th February!

- Showing behind the scenes of being a physicist at CMS
- Answering questions
- Each story was seen by 700-1000 people

International Women's Day 2019

- 8 CMS Women shared their experience in physics and give advice to the next generations

- <https://www.youtube.com/watch?v=c5PnoIHiZxY&t=177s>
- <https://www.facebook.com/CMSexperiment/videos/1299338800216339/>
- <https://twitter.com/CMSExperiment/status/1103944135994691585>

#3 most popular CMS Facebook post ever!

08/03/2019
09:59

Happy International Women's Day! 🌟🌟 Seven #CMSwomen

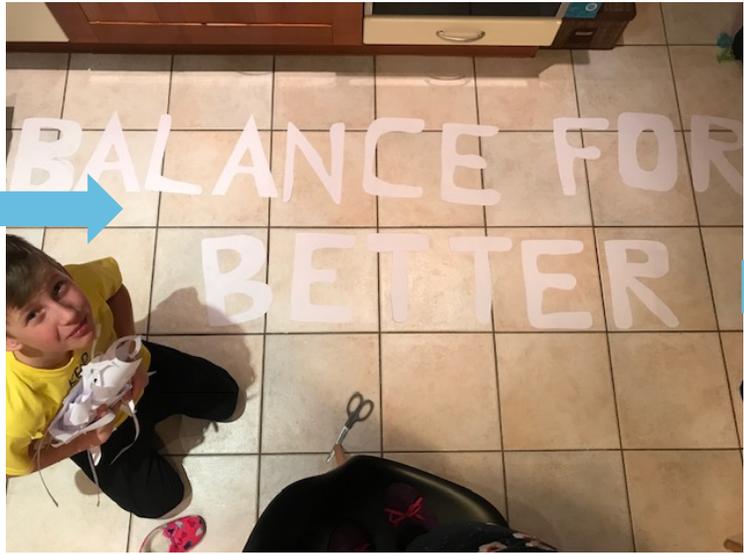
73.4K

3.6K
1.5K



Very high engagement rate
→ people shared, commented, liked
→ This allows to reach new audience.

February 2019 – “behind the scenes” execution phase



Video 1: Photo sessions during CMS week
Video 2: Help with the scripts, Recording.



