

Issue Brief: US R&D Community Pandemic Recovery Lagging

2021 APS March Meeting Data Reveals Experimental Physicists,
Female Early-Career Faculty/Researchers, and Recent Graduates
Most Impacted

Overview

The American Physical Society’s (APS’s) March Meeting is the world’s largest physics conference. Hosted annually in the United States, approximately 10,000 research summaries are submitted each Fall by researchers around the world for presentation the following March. These research submissions serve as a proxy for the health of the physics research enterprise. A detailed analysis of this year’s submissions reveals a significant reduction in US research output due to the pandemic, with disproportionate impacts on key segments of the US physics community, including women and early-career researchers.

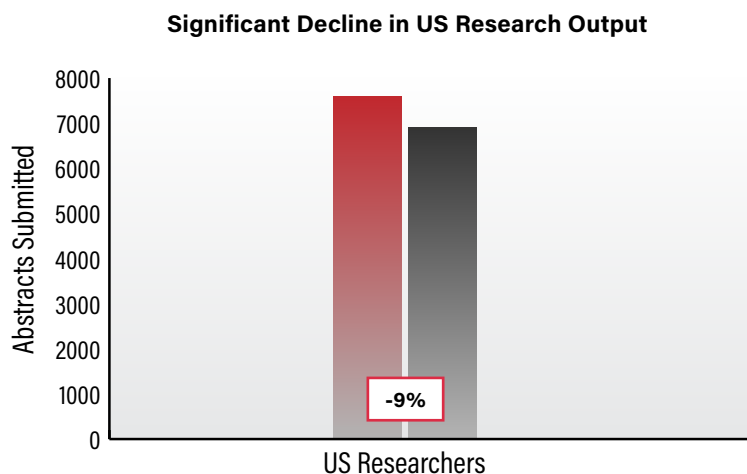
Impacts on Researchers and Their Research Productivity

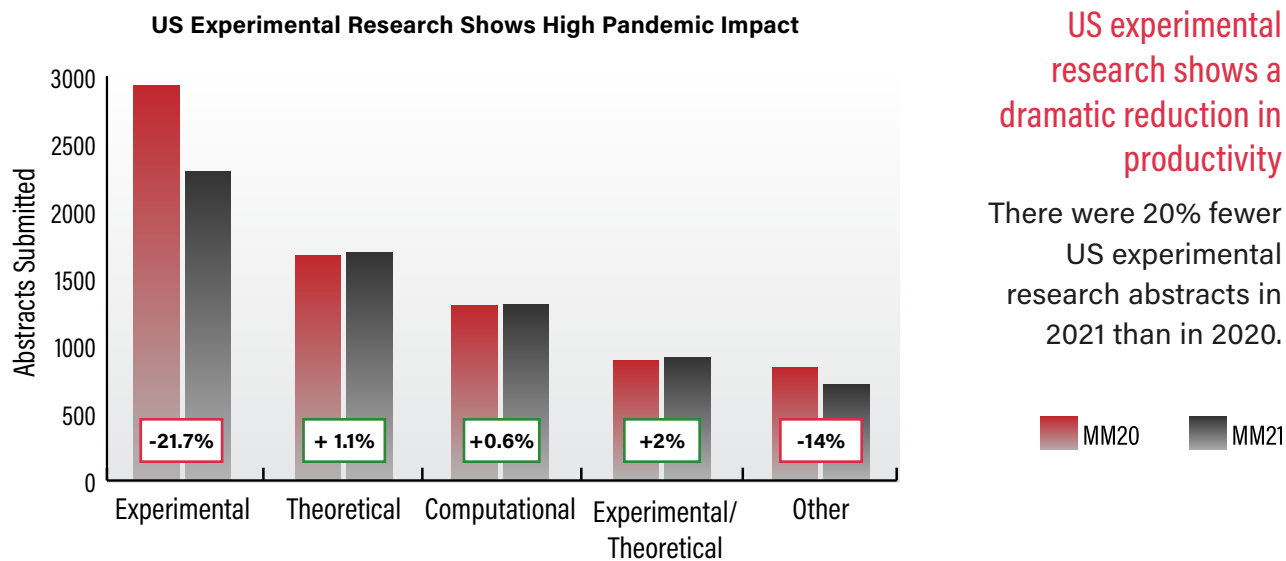
The 2021 March Meeting will be held online with discounted rates compared to previous years, enabling physics researchers worldwide to share their latest work. The meeting continues to see strong global representation, with research summaries – also referred to as “abstracts” – submitted from researchers in more than 75 countries. An analysis of the abstract submitters’ information provides several insights on the health of the physics research community:

- Overall US physics research output was significantly reduced from the 2020 March Meeting to the 2021 March Meeting.
- In particular, US experimental physics was severely impacted by the pandemic.
- Researchers at critical career stages are being disproportionately affected.

Reduced US Research Results

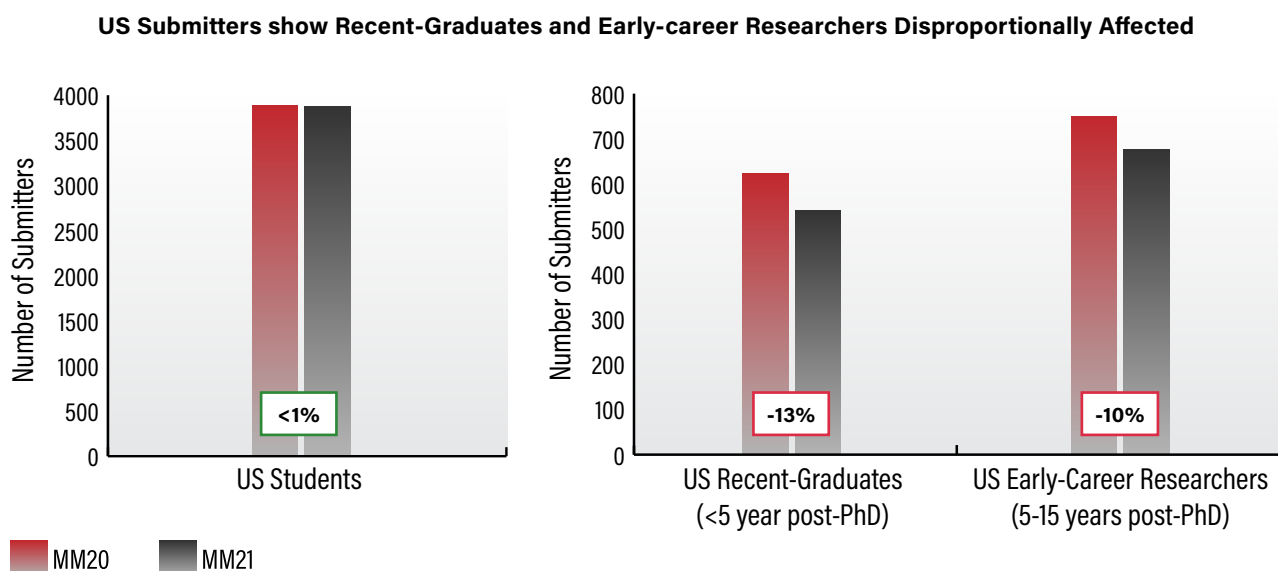
Overall, the net number of abstracts submitted to the 2021 March Meeting decreased by approximately 9%.



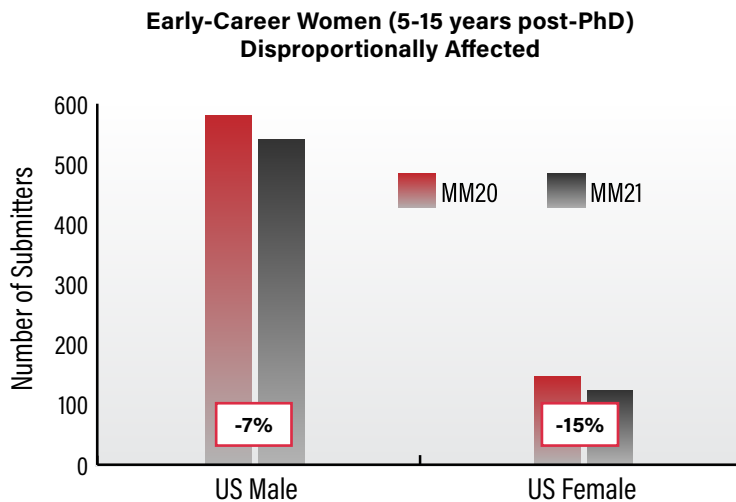


Pandemic Impacts US Researchers at Critical Career Stages

Analyzing the US submitters' demographic data reveals that both recent graduates (<5 years since PhD) and early-career faculty/researchers (5-15 years post-PhD) are negatively impacted by the pandemic. Both career-stage groups have a strong career incentive to attend scientific conferences and present their work to advance their careers. However, both groups will have a decreased presence at the 2021 March Meeting. US recent-graduate and early-career faculty/researcher submitters are down -13% and -10%, respectively, from 2020 to 2021.



US female scientists, in particular early-career faculty/researchers who received their PhD between 5 and 15 years prior, have been disproportionately affected by the pandemic. Among the submitters in this career stage, the number of US female submitters decreased by more than -15% – more than double the decrease of their male counterparts (-6.9%).



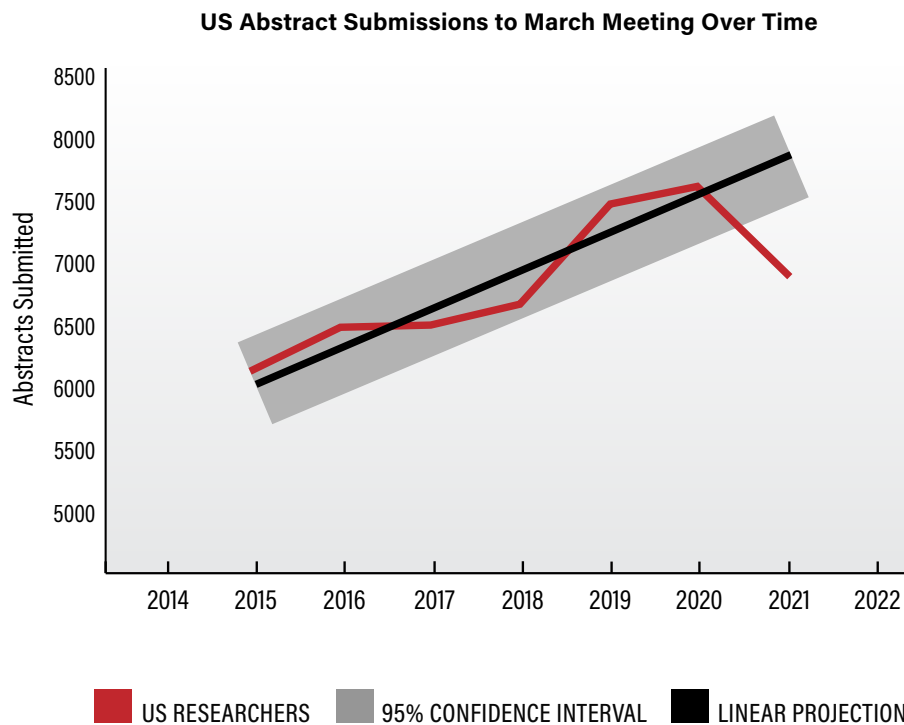
Policy Responses

The current pandemic has resulted in a severe reduction in our nation’s research activity, with many of our universities and national labs experiencing a temporary, but nearly complete, shutdown of research. Our findings compel not only the need for immediate action, but also the need for solutions to address the groups within the R&D community most affected by the pandemic. The following policy actions would address the problems:

- To restore US STEM research capability to a level comparable to our competitors, the US physics community requires immediate research stimulus funding. Partial- or full-cost extensions should be prioritized to experimental physics researchers, as necessary.
- To sustain the front-end of the US STEM workforce pipeline, targeted programs are needed to provide recent PhD graduates and postdocs with opportunities to further develop their independent research skills, while keeping them engaged with the US R&D enterprise. These programs will ensure continuity in their careers and enable them to become more competitive candidates regardless of career choice and even stronger contributors to our nation’s research enterprise.
- To sustain US STEM diversity, federal science agencies should enact means for research stimulus funding to be distributed with particular consideration given to researchers who face **family-care demands**, regardless of gender-identity.

Appendix

US abstract submissions to the APS March Meeting increased each year from 2015 to 2020. A comparison of the number of US submissions to the 2021 APS March Meeting to a predictive model based on the 2015-2020 US submissions clearly shows that the results are outside of the expected trend.



The 2021 March Meeting US submissions are outside the 95% confidence bound of the model, showing that it is breaking with the trend of the past 5 years.

US submissions to the March Meeting in the 2015-2021 period (red). Linear Model using the 2015-2020 data, linear fit $r=0.91$ (black), with 95% confidence bounds (grey).

