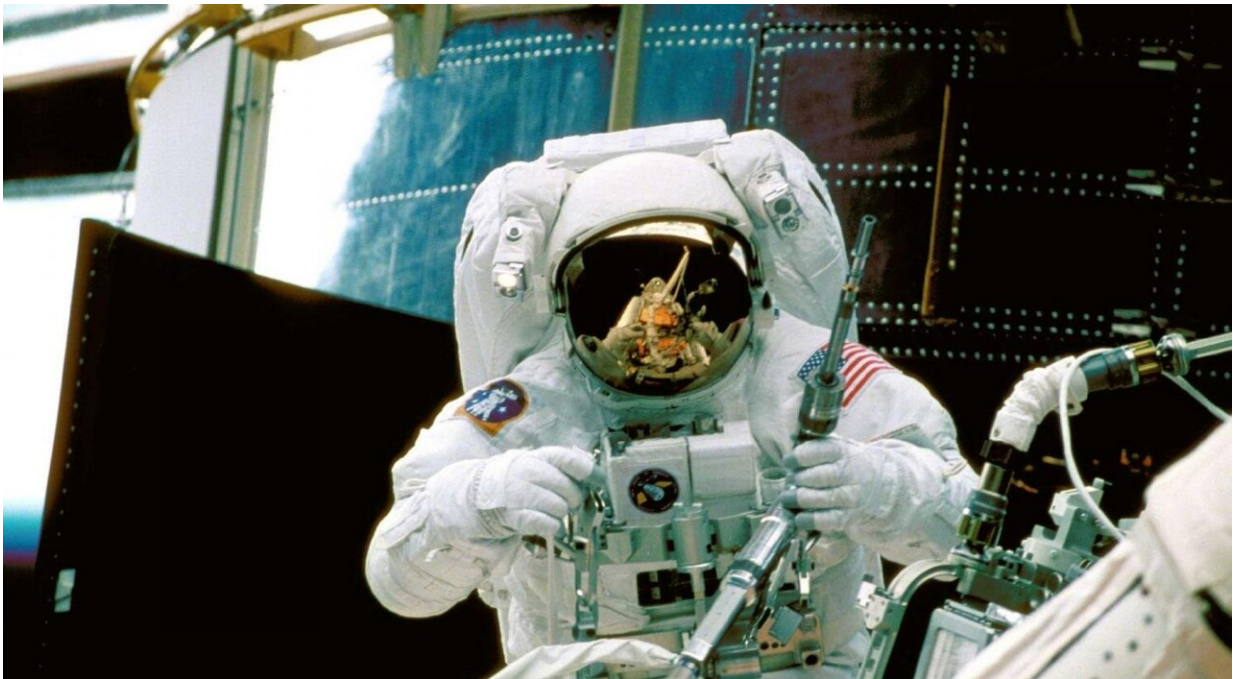


# Hubble turns lens towards gender bias, yielding lessons for Earthlings

February 18 2020, by Andrew Sorensen

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A NASA astronaut services the Hubble Space Telescope from orbit in 1997.  
Credit: NASA

The Hubble Space Telescope (HST) is helping find new ways to combat gender bias, according to new research from the University of Colorado Boulder's Leeds School of Business.

Stefanie K. Johnson, associate professor at the Leeds School of Business,

worked with co-author Jessica F. Kirk, assistant professor at the University of Memphis, to analyze 16 application cycles for time on HST. Johnson and Kirk found that stripping out nearly all [personal information](#) can nearly eliminate [gender](#) bias from application processes, likely across industries beyond science.

The committee in charge of granting time on the [telescope](#) approached Johnson back in 2016. The Hubble Space Telescope Time Allocation Committee (HST TAC) was looking for ways to level out the acceptance rate between male lead scientists and female lead scientists who proposed projects using the telescope.

The cycles Johnson and Kirk analyzed had 15,545 applications. Among those, only 3,533 proposals had a female lead scientist. Male lead scientists had an acceptance rate of 23%. Female lead scientists had an acceptance rate of 19%.

"The director of the Space Telescope Science Institute was looking for a solution to that gender gap," Johnson said. "Our business research background was a perfect fit for finding insights."

Johnson and Kirk found male reviewers in HST TAC were rating female scientists' proposals significantly worse than male-led proposals.

From the 2013 to 2018, the committee tested several methods of masking the gender of lead scientists, including taking scientists' names off of the front page of the proposal, using a first initial instead of a full name and listing all scientists on a proposal in alphabetical order to hide the lead scientist.

Finally, all scientists' information was removed, and applicants were instructed to write their proposals in a way that would make it difficult for the committee to know who wrote it. This is known as "dual-

anonymization."

Female lead scientists performed slightly better than men when the proposals were completely anonymized. Johnson and Kirk found reviewers rated male and female lead scientist's projects equally well—meaning dual-anonymization eliminated the gender bias.

"You're making the fairest decision based on the science," Johnson said. "It's not proof that women will always do better, but hopefully the [gender balance](#) will be closer than in years past."

Johnson said companies and organizations have been using dual-anonymization for decades, but the idea has gained visibility since the launch of the women's movement in 2016. Johnson believes the data from her new study shows dual-anonymization could work for nearly any group looking to combat [gender bias](#), not just telescope projects.

"Until now, there hasn't been a lot of data on whether it works or not," said Johnson. "What this shows is that taking gender out of the equation does allow women to perform better."

The group's findings will appear shortly in the *Publications of the Astronomical Society of the Pacific*.

**More information:** *Publications of the Astronomical Society of the Pacific*, [DOI: 10.1088/1538-3873/ab6ce0](https://doi.org/10.1088/1538-3873/ab6ce0)

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