

Division of Mathematical and Physical Sciences Fall 2022



This landscape of glittering stars forms the edge of a nearby, young, star-forming region in the Carina Nebula. Rutgers astronomer Kristen McQuinn will use data from the new Webb Telescope to study how small galaxies form at cosmic dawn. Image Credit: NASA

Dean's Address:

I am pleased to extend a (slightly belated) welcome to the Fall 2022 semester. I hope that everyone had a good summer and is as excited to begin the semester as I am. A huge "thank you" to the team in SAS that is producing this newsletter on a regular basis and to the departments and centers for sharing all the highlights. You will see below, among other news, that two of our faculty members were named members of the American Academy of Arts and Sciences (AAAS), three of our students were named Goldwater Scholars, and the Geology Museum recently celebrated its 150th anniversary. As always, it is thrilling to see all the achievements of MPS people toward the mission of our division, school, and university. I invite you to connect with us on social media to stay up to date with happenings throughout the division. My best wishes for the Fall semester (and beyond).

Thu D. Nguyen



Departmental Highlights



Chemistry and Chemical Biology

Charles Dismukes' quest to save life on the planet is reflected in the study and perfecting of the process of artificial photosynthesis.

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Computer Science

Eric Allender weighs in on the existence of one "master problem" underlying all cryptography in *Quanta Magazine*.

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Center for Discrete Mathematics and Theoretical Computer Science (DIMACS)

Now in its 29th year, the DIMACS Research Experiences for Undergraduates (REU) summer program welcomed 38 talented undergraduate students from across the country to conduct original research at Rutgers. They were mentored by faculty representing several MPS departments and other schools.



Earth and Planetary Sciences

Did you know the first museum dedicated to geology resides at Rutgers? The Rutgers Geology museum recently celebrated 150 years! Learn more about its history and mission.

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Mathematics

Find out how Stephen Miller, chair of mathematics, contributed to the work of the winner of the 2022 Fields Medal, one of the highest honors in mathematics.

[Read more](#)



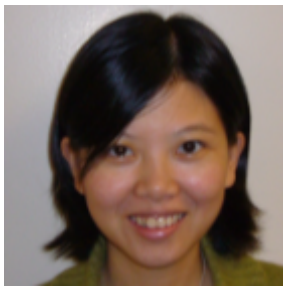
Physics and Astronomy

Kristen McQuinn has been granted early access to data from NASA's James Webb Space Telescope, aiding in her research into the expansion rate of the universe.

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Statistics

Ying Hung has been inducted as a Class of 2022 Institute of Mathematical Statistics Fellow! As a fellow, she is recognized for "fundamental contributions to design, statistical analysis, and



uncertainty quantification of computer experiments with applications in cell biology."

Additional Departmental Highlights

Chemistry and Chemical Biology Spencer Knapp was named a Fellow of the American Chemical Society, which recognizes members who have made exceptional contributions.

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Computer Science Rutgers Ph.D. Jay Lim was awarded the ACM Special interest Group on Programming Languages John C. Reynolds Outstanding Dissertation Award, making this the second time he has received this award.

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DIMACS In June, the immersive DIMACS Reconnect Workshop sponsored by SENTRY, the newly established DHS Center of Excellence at Rutgers, welcomed teaching faculty from small institutions, providing them with effective methods to teach optimization in their own classrooms, with an eye toward approaches that are engaging and accessible to undergraduate students, including the use of optimization in art.

Earth and Planetary Sciences Lauren Neitzke Adamo and Rutgers scientists teamed up with four K-12 teachers on a deep-sea coring expedition to connect with the public and share their research.

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Mathematics As the recipient of a Boren Scholarship, mathematics major Julianna Johnson SAS'23 will receive up to \$25,000 to study in an area of the world that is critical to interests of the United States.

[Read more](#)

Physics and Astronomy An international team, including four Rutgers astronomers, discovered a megamaser five billion light years from earth, naming it Nkalakatha, which means "big boss" in isiZulu. "Nkalakatha is one of the most powerful OH megamasers known," notes astronomer Andrew Baker, "so it is truly a 'big boss.'"

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