Australian Government

THE PRIME MINISTER'S PRIZES FOR SCIENCE

Celebrating 20 years

Emeritus Professor Cheryl Praeger

The University of Western Australia

2019 PRIME MINISTER'S PRIZE FOR SCIENCE

- Emeritus Professor Cheryl Praeger is internationally acclaimed for her research in mathematics, including fundamental contributions to group theory, permutation groups and combinatorics (see Notes).
- For more than 40 years, she has lived her passion for education and demonstrated an extraordinary ability to foster and inspire others with her love of mathematics, creating a huge body of academic work and an equally large body of service for the generation of new mathematicians in Australia.
- Her highly innovative work includes research into the mathematics of symmetry in graphical models. These have far-reaching applications, such as enabling search engines to retrieve information efficiently from the World Wide Web.
- Emeritus Professor Praeger is similarly famous for her research and work on algorithms. Many of her algorithms are incorporated into powerful computer systems (Magma and GAP), and have transformed the way in which algebra research and teaching is conducted.
- Her research has demonstrated a remarkable level of detailed knowledge and insight; an ability to use techniques from number theory, probability, statistics and computer science to solve challenging problems.
- She has also supported women in mathematics and science, especially through her roles with national and international scientific bodies, advocating for mathematics in schools at all levels and promoting the discipline in emerging economies.
- Emeritus Professor Praeger has shown outstanding teaching and guidance to students at The University of Western Australia; the influence of her research, teaching and mentoring has grown to a level of astonishing international impact. She has put Western Australia on the global mathematical map by building a superb research group and nurturing local talent, such as 2018 Fields Medalist, Akshay Venkatesh, who was taught and mentored by her as a 13-year-old undergraduate.
- Emeritus Professor Praeger has one of the most stunning publication records of any mathematician. She currently has more than 410 publications; a remarkable number in her field of mathematics.
- She has served as President of the Australian Mathematical Society; as a member of the Prime Minister's Science Council; and, has been actively engaged with the Australian Mathematics Trust.

NOTES:

- Group theory is central to public-key cryptography used for secure banking, digital signatures and secure internet communication.
- Permutation group theory is used in applications including solving Rubik's Cube.
- Combinatorics contributes to real-world applications ranging from error correcting codes in digital communications systems to calculating gambling payouts.

Qualifications

- BSc (Hons1) in Mathematics, University of Queensland (1970)
- M. Sc. University of Queensland (1972)
- M. Sc. University of Oxford (1972)
- D. Phil. University of Oxford (1973)
- D. Sc. University of Western Australia (1989)

Career highlights

- 2018 Honorary Doctorate, Primorska University, Slovenia
- 2017 Honorary D Math, University of Queensland, Australia
- 2015 Inductee, Western Australia Science Hall of Fame
- 2015 Honorary D Sc, St Andrews University, Scotland
- 2015 Honorary Doctorate, Yazd University, Iran
- 2015 Mehdi Behzad Prize, Iranian Mathematical Society
- 2014 George Szekeres Medal, Australian Mathematical Society
- 2014 Honorary Member, London Mathematical Society
- 2013 Thomas Ranken Lyle Medal for the Australian Academy of Science
- 2013 Honorary Life Member, Australian Mathematical Society
- 2012 Citation for Outstanding Contributions to Student Learning, Australian Government Office for Learning and Teaching
- 2012 Fellow, American Mathematical Society
- 2011 Euler Medal, Institute for Combinatorics and its Applications
- 2011 University of Western Australia Excellence in Teaching Awards
- 2011 Moyal Medal and Lecture (Mathematics), Macquarie University
- 2009 Western Australian Scientist of the Year