

Citation in support of Ruth Williams' nomination for an Honorary Doctorate

Professor Ruth Williams obtained her BSc (Hons) and MSc in Mathematics at The University of Melbourne. The quality of her work was already apparent back then: she published two single author articles based on this thesis in the Journal of Optimization Theory and Applications in 1980 on Nash equilibria and mixed strategies in multi-player games. She went on to obtain her PhD at Stanford University in 1983.

Today Professor Williams is recognised among the handful of top researchers in the world on stochastic networks. These networks have widespread application to diverse areas such as factory production, and computer and telephone call scheduling, with the internet a more recent application. Professor Williams consistently collaborates broadly with top researchers in her field. She relentlessly seeks to shift the boundaries in her research. For example, she recently worked with biological colleagues to uncover insights concerning 'cell queueing behaviour' in biological reaction networks.

Professor Williams' work has been recognised by many honours such as her election to the National Academy of Sciences, the American Academy of Arts and Sciences, and the Australian Academy of Science as a corresponding member. She is also one of a select few who have been invited to speak at the International Congress of Mathematicians. In 2016, Professor Williams became the first, and to date only, woman to receive the highly prestigious John von Neumann Theory Prize by the Institute for Operations Research and the Management Sciences. Professor Williams has served the international community in a number of senior leadership roles, including the presidency of the Institute of Mathematical Statistics and editorial activities for some of the most prestigious journals in her field.

Since moving to the United States in 1978, Professor Williams has frequently returned to Australia to visit both her family and the University of Melbourne. During each visit she has made it a point to engage with the staff and students in the School and has been especially supportive of female staff. She is an important role model for women in STEM and plays an active role in the advancement of women in the mathematical sciences through organisation of networking, academic and social events. In her interactions with the School she has played an important mentoring role for staff at all levels.

While completing her studies, Professor Williams resided on campus at St. Hilda's College, and in 2013 she was appointed as a Fellow of the College in recognition of her academic excellence and contributions to the College community. Since 2016, Professor Williams has been an active member of the Scientific Advisory Committee of the University of Melbourne-based ARC Centre of Excellence for Mathematical and Statistical Frontiers (ACEMS). Her involvement provides an important link between researchers at ACEMS and their counterparts in North American institutions. As continuing member of its Governance Board from 2015, Professor Williams has also been a very strong international advocate of the Australian Mathematical Research Institute, MATRIX, which is a partnership between the University of Melbourne and Monash University.

Professor Williams' mentorship and advocacy has been particularly valuable for the School's bold strategy to address gender imbalance in the mathematical sciences. For example, the recruitment of new staff through female only positions in 2015-16 has resulted in eight new female staff members over the past three years. The nomination of Professor Williams for an honorary doctorate, is a deliberate reaffirmation of the School's commitment to its gender equity strategy. Through her senior roles and public presence in the global mathematical and statistical community, Professor Williams has been an outstanding ambassador for the University. Her track record, this citation, and the letters of reference make it clear that she is a deserving candidate for the Honorary Doctorate of the University of Melbourne.

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