Citation for Dame Jocelyn Bell Burnell CH DBE FRS FRSE FInstP

Doctor of Science *(honoris causa)*

Tuesday, 14 October 2025

Pro-Chancellor, it gives me great pleasure to present Dame Jocelyn Bell Burnell CH DBE FRS FRSE FInstP to you for admission to the degree of Doctor of Science *(honoris causa)* in recognition of her outstanding contribution to the field of astrophysics, her passionate advocacy of under-represented students in the STEMM disciplines and as an inspirational role model for women in science.

Dame Jocelyn graduated from the University of Glasgow in 1965 with a Bachelor of Science degree in Natural Philosophy (physics), with honours, and completed a PhD at New Hall, University of Cambridge in 1969. However, she first rose to prominence as a post-graduate student in 1967, while working on the Interplanetary Scintillation Array, an instrument she helped build just outside Cambridge. These were the very early days of radio astronomy, and her careful determination to understand an anomaly in the data, and her dedication and persistence in the face of skepticism from her Supervisor (Antony Hewish) resulted in the discovery of pulsars, an experimental result that changed the field of radio astronomy forever. Some years later, pulsars were identified as extraterrestrial objects, rapidly rotating neutron stars, that had been predicted theoretically decades earlier. Antony Hewish and Martin Ryle were awarded the 1974 Nobel Prize in Physics, Hewish for his decisive role in the discovery of pulsars. Controversially, Jocelyn was not included in the citation as she was a graduate student. This decision continues to be debated.
Pulsars have subsequently been used to test theories of fundamental physics, including Einstein's Theory of General Relativity in extreme environments, to probe the Interstellar Medium of our Galaxy, and to search for Gravitational Waves. They are the most precise clocks in the Universe and have been used to calibrate Earth clocks.

Pulsars also provide an important link to the University of Sydney. By 1978, the Molonglo Radio Telescope (owned by the University of Sydney) had discovered over 150 pulsars, half of the total number of such objects known at that time. The first connection that pulsars arise from the explosions of massive stars was made at Molonglo by Large, Vaughan & Mills (1968) for the Vela supernova remnant. There are other links with Australia. In addition to her research visits, she presented in 2018 the keynote John Bolton Lecture at Parkes, was an invited speaker at the 2019 International Science School at the University of Sydney, and presented the prestigious Walter Stibbs Lecture that year.

For more than 50 years, Jocelyn has been one of the world's most recognised and respected astronomers. With often little encouragement, she has worked in many roles in astronomy, as an academic at several universities, including the University of Southampton, University College London, the Royal Observatory, Edinburgh, as well as undertaking several positions at the Open University, including a decade as Professor of Physics. In all these appointments, she has been an inspiring, caring and dedicated teacher. Her diverse career also included being Project Manager for the James Clerk Maxwell Telescope on Mauna Kea, Hawaii and Dean of Science at the University of Bath. Since 2007 she is visiting Professor of Astrophysics at Oxford University and a Fellow of Mansfield College at Oxford University. She was Chancellor of Dundee University from 2018 – 2023.
Her standing has been recognised in many ways and with many honours, including Dame Commander of the Order of the British Empire, Fellow of the Royal Society, President of the Royal Astronomical Society, President of the Institute of Physics, the first woman to hold this position and President of Royal Society of Edinburgh, also the first woman to hold this position. In 2025, she was appointed to the prestigious Order of the Companions of Honour for a sustained and outstanding contribution to science.

Jocelyn has received many awards, a few of which include the Beatrice M. Tinsley Prize of the American Astronomical Society, Herschel and Gold Medals of the Royal Astronomical Society, the Grote Reber Medal, the Royal and Copley Medals of the Royal Society, the Astronomische Gesellschaft's Karl Schwarzschild Medal, and the Prix Jules Janssen of the Société Astronomique de France.

A very significant event occurred in 2005. Jocelyn was one of a small group of women that set up the Athena SWAN program in the UK. The program aims to improve gender diversity and equity in higher education and research. This highly successful, evidence-based approach has inspired similar programs in many countries, including Australia, where it is known as SAGE (Science in Australia Gender Equity). The initiative was largely driven by her experience of patronising behaviour as a female scientist, even after her momentous discovery of pulsars. Jocelyn became a role model and champion for women in physics. She has made numerous speeches and presentations to promote women and girls in science, using her positions as visiting Professor of Oxford and Chancellor of Dundee University to encourage the next generation of STEMM students.

Athena SWAN and SAGE are only a part of her support for under-represented groups in STEMM. In 2018 she won a Special Breakthrough Prize in Fundamental Physics for her discovery of pulsars. Amazingly, she used the entirety of the $3 million prize money to set up the Bell Burnell Scholarship Fund to encourage and support female, minority and refugee students to become research physicists. This encapsulates the measure, humanity and vision of this extraordinary scientist.

Pro-Chancellor, I present Jocelyn Bell Burnell CH DBE for admission to the degree of Doctor of Science *(honoris*

causa) and invite you to confer the degree upon her.