

Report on the Dirac Lecture

Robert Lord May of Oxford, OM AC FRS FAA Kt FRSN

On Friday 29 April 2011, Robert Lord May of Oxford, arguably the greatest mathematician that Australia has produced, was invested as a Fellow of the Royal Society of NSW by the Governor. Earlier that day, Lord May presented the Dirac Lecture at the University of New South Wales, jointly sponsored by the Society. The topic of Lord May's lecture was **"Beauty and truth: their intersection in mathematics and science"**.



Lord May delivering the Dirac Lecture

He took us on an interesting exploration of some of the important concepts of mathematics, from Euclidean geometry via the concept of imaginary numbers to the mathematics of fractals and chaos theory and the extraordinary power of mathematics to describe observed real-world phenomena. Updating the observation by Galileo, "this grand book is written in the language of mathematics, and its characters are triangles, circles and other geometric objects", Lord May pointed out that rather than triangles and circles, today the mathematical objects are more likely to be fractals and "strange attractors". Nonetheless, as Galileo observed, and referring to the examples of Julia sets and Mandelbrot sets, there is great beauty in the elegance with which we can both describe and understand the immense complexity of the universe. He went on to explore the paradigm shift that Einstein divined from the results of the Michelson-Morley experiment that had found that the speed of light was the same for all observers. Einstein's formulation of the special theory of relativity led to a profound shift in our understanding of the relationships between momentum, mass and energy that has enabled extraordinary insights and understanding of the nature of the universe, from gravity to nuclear fission.



L to R Dr Fred Osman, Em. Prof. Heinrich Hora, Lord May and the President after the Dirac Lecture

Lord May pointed out that, regrettably, many of the great contributions do not get the recognition that they deserve. In his view, Paul Dirac was such a person – his formulation of the Dirac equation and its implication of the existence of positrons was one of the greatest steps forward in theoretical physics in the 20th century, yet his name is nowhere near as well known as that of Einstein. Quoting Keats “beauty is truth, truth beauty – that is all ye know on earth and all ye need to know”, Lord May observed: well yes, but not really.



Lord and Lady May (centre) with Her Excellency the Governor and the President following Lord May's investiture as Fellow of the Society at Government House Sydney

Vote of thanks to Lord Robert May of Oxford
From Dr Frederick Osman – AIP NSW Branch Secretary

Distinguished Congregation, Guests and Fellows, this is to express my warmest congratulations to Lord Robert McCredie May, Baron May of Oxford, OM, AC, FRS FAA Kt FRSN to the prestigious award of the Dirac Medal in the name of the New South Wales Branch of the Australian Institute of Physics.

We at the Institute of Physics have been involved from the very beginning in 1979 at the Dirac Lecture presented by the Swedish Nobel Laureate Hannes Alfvén with supporting the award at this initial and following occasion. We also thank the University of New South Wales for carrying forward these celebrations in cooperation with our community of physicists. The members of the Institute of Physics are honored to celebrate the events and especially this time for you as a colleague who is entirely from our area.

Lord May, we are proud of you as an most eminent example for us all in our world of physics and with your unique success to the broader world of knowledge in science, applications and for the development up to key questions of politics and life. We are most grateful to you to have this very unique opportunity to listen to your wonderful topic of Beauty and Truth: Their Intersection in Mathematics and Science.

Complete Dirac Lecture Footage of the event can be found here:
<http://www.science.unsw.edu.au/dirac-lecture/>