



1905 Einstein's Miraculous Year

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**Chapman Hall
Engineering House
11 Bagot Street
North Adelaide**

**Tuesday 15th November 2005
5:30 pm for 6:15 pm
Refreshments provided at 5:30 pm**

Abstract

Rod Crewther: "What time is it? In Relativity, it depends" Einstein's special theory (1905) is relativity without gravity. The key ideas are that the laws of physics and the speed of light are the same for all observers. As a result, two observers may keep time differently, disagreeing about the order of some events and the elapsed times between others.

Sam Drake: 1905 is commonly referred to as Einstein's *Annus Mirabilis* ('year of wonders'). In that year Einstein published four papers on three unrelated topics that fundamentally changed our understanding of nature. This talk will describe the content and impact of these papers. Lastly, following on from Rod Crewther's talk some of the arguments that led Einstein from the special theory of relativity to the general theory of relativity (which describes the gravitational "force") and how this theory is used in the frequency settings of the global positioning system (GPS) will be presented.

Speakers

Rod Crewther is a physicist, specializing in the field of gauge field theories. After gaining his M.Sc at Melbourne University, Crewther was awarded a Fulbright scholarship to the California Institute of Technology. He studied under the tutelage of Nobel prizewinner Murray Gell-Mann and was awarded his doctorate, after successfully defending his dissertation against the renowned theorist Richard Feynman.

After holding postdoctoral positions at the CERN and Cornell University, Rod Crewther was appointed a senior lecturer in physics at the University of Adelaide. He designed the honours physics course "Gauge Field Theories," and lectures on Quantum Mechanics, Advanced Dynamics and Relativity, and Quantum Field Theory.

Sam Drake is a senior research scientist in the Defence Science and Technology Organisation (DSTO). He obtained his honours degree in physics from the University of Melbourne, and completed a PhD in mathematical physics (General Relativity) at the University of Adelaide. Following a post-doctoral position at the University of Padua, Italy, he joined the Navigation Systems group of DSTO in 1999 working on the operational analysis of the global positioning system (GPS). Since starting at DSTO Sam has worked on a variety of projects ranging from GPS to communication networks. Sam is currently working on autonomous unmanned aerial vehicles. Sam also teaches General Relativity in the Department of Physics at the University of Adelaide.

CPD POINTS It is recommended that attendance at this talk be counted as one CPD point.

ALL VISITORS ARE WELCOME

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