

## AIP NSW Branch March Meeting Report

On Tuesday 22 March 2011, the Australian Institute of Physics and the Royal Society of New South Wales held its annual two societies meeting of the year at the University of Sydney and featured Dr Ragbir Bhathal on his topic of Searching for very fast light flashes. Ragbir is the Project Director of the OZ OSETI Project, the longest dedicated search for ETI in the optical spectrum in the Southern Hemisphere. He is considered the Father of SETI in Australia. He is an academic staff member of the School of Engineering at the University of Western Sydney and teaches engineering physics, project management, and radio and satellite communications. His research interests are in astrophysics, physics, physics education and Aboriginal astronomy. He has published several papers in international journals and 15 books, six on astronomy and has been a recipient of various awards that included the 1988 Royal Society of NSW Medal for services to science and research.

He opened his talk by saying that we should be searching for nanosecond laser pulse from ETI. Dr Bhathal believes that ETI would have surpassed the microwave threshold and gone on to use laser pulses for intergalactic communications. A nanosecond laser pulse has several advantages, he said. Apart from its directivity, a 10<sup>15</sup> W or more nanosecond laser pulse would outshine its star by four to seven orders of magnitude. This pulse could thus be easily detected by present day optical telescopes equipped with fast response PMTs or APDs. Because the telescopes are being used as photon buckets they need not be highly sophisticated. The fact that the National Ignition Facility in the US has been able to generate 10<sup>15</sup> W laser pulses although for a few nanoseconds lends credibility to the use of lasers as communication devices by ETI civilisations. The optical search strategy has been used in a dedicated mode only for the last ten years. Four groups, three in United States (Harvard University/Princeton University, University of California and the SETI Institute) and one in Australia (OZ OSETI Project at the University of Western Sydney) have led the charge for the optical search strategy.

Dr Bhathal's optical search is the longest dedicated optical search in the Southern Hemisphere. Last year a group of Japanese scientists and engineers also joined the optical and microwave searches. However, to date no positive signals in the optical spectrum have been received. Although a laser look alike signal was detected in 2008 by Dr Bhathal emanating from the globular cluster 47 Tucanae it was dismissed after a six month search in the same region failed to detect the signal again. Considered as the Father of SETI in Australia, Dr Bhathal hopes to continue the optical search with a new dedicated one metre telescope which is on the drawings boards at the moment. Dr Bhathal also discussed the latest developments in the microwave search strategy which clocked 50 years last year and other programs which are underway for searching for life in the universe, such as searching for glycine, searching for earth like planets by extra-solar planet scientists and the Kepler mission, the Mars explorations and meteorites.



**From left to right, Dr Frederick Osman, Professor Heinrich Hora, Dr Ragbir Bhathal and Mr John Hardie**

He ended his lecture by quoting from the great 19th century mathematician and physicist Karl Gauss who said that the detection of a signal from ETI “would be greater than the discovery of America”. The Australian Institute of Physics and the Royal Society of New South Wales thanks Dr Ragbir Bhathal for his outstanding lecture!

**Dr Frederick Osman – AIP NSW Branch Secretary**