The observatory closure is primarily due to the author's advancing age and the need to invest into new technologies, the photoelectric photometer has been mostly supplanted by CCD devices, an expense that the author can ill afford.

Heartfelt thanks are due to all those people that over the years have supported the observatory, unfortunately they are too many to mention individually. ☆

Okkie de Jager (1961 – 2010)

Adri Burger (Prof)

Prof Okkie de Jager of the Centre for Space Research of North-West University lost his valiant battle against cancer on 14 December 2010 at the age of 49. His main field of interest was gamma-ray astrophysics, and included theoretical work, data analysis, instrument design and also innovative astro-technologies. He remained active until the day that he was admitted to hospital for the last time, less than two weeks before his death. We mourn the passing of a brilliant researcher whose dedication to his work, positive outlook on life and contagious enthusiasm for exploring the unknown and explaining the unexplained, made him a great colleague and a much sought-after collaborator.

Ocker Cornelis de Jager was born on 9 April 1961 in Pretoria. He completed his Matric in Parys, Free State, and his undergraduate and graduate studies at the Potchefstroom University for CHE (now North-West University). In 1987 he completed his PhD in Physics with a thesis entitled "The analysis and interpretation of VHE gamma-ray measurements" under the supervision of Prof Christo Raubenheimer.

He was appointed as Junior Lecturer in 1984 at the then Potchefstroom University, Research Scientist in 1985, Senior Research Scientist in 1988, and Associate Professor in 1994, and was promoted to Professor in 1996. Prof De Jager established himself in the field of gamma-ray astrophysics during the early years of his career and was awarded the President's Award of the National Research Foundation (NRF) of South Africa twice for his contributions to this field of research. In 1991 he won the competitive National Research Council Research Associateship, which enabled him to complete a Post Doctoral Research Associateship at NASA Goddard Space Flight Center. There he worked with Dr Alice Harding, and they were the first to develop a relatively accurate procedure to predict the high-energy to very high-energy gamma-ray spectrum

of the Crab Nebula. Subsequent gamma-ray observations confirmed the predicted gamma-ray fluxes. He also worked with Dr Floyd Steckerof NASA Goddard Space Flight Center and they were the first to predict the cosmic horizon for very high energy gamma-rays from active galactic nuclei with relative accuracy. This opened a whole new field of research and serves as the motivation for new large projects which attempt to reduce the gamma-ray threshold so that the cosmic horizon can be increased. Many other successes followed, and in 1995 he received the Shakti P Duggal Award for exceptional contributions in cosmic-ray physics, and in 1996 the British Association Medal for the Advancement of Science.

De Jager became involved at the international level very early in his career. Between 1989 and 2003 he made significant contributions towards human capacity development for the MAGIC gamma-ray experiment in La Palma, Spain, a large atmospheric imaging Cherenkov telescope. He was also involved in the High Energy Stereoscopic System (H.E.S.S.) since the late 1990s, and was Group Leader for the South African participation in this highly-successful gamma-ray project. The H.E.S.S. collaboration was awarded the prestigious European Descartes prize for Research for 2006, and the 2010 Rossi Prize of the High Energy Astrophysics Division of the American Astronomical Society. In 2005 De Jager was elected to serve on IUPAP's Commission on Cosmic Rays. He was leader of the working group on Supernova remnants, Pulsars and Plerions (WGSPP) for the international Cerenkov Telescope Array since 2008. The fact that De Jager was offered the directorship of a prestigious European research institution is testament to his international standing; that he turned it down demonstrated his loyalty to his country.

His international involvement did not diminish his interest and his involvement in science in South Africa, especially multi-wavelength astronomy. He served on various NRF and DST panels, was a lecturer in the National Astrophysics and Space Science Programme (NASSP), and also sponsored local outreach programmes. He was author or co-author of 170 publications in international refereed journals, and eight masters students and eight PhD students completed their studies under his supervision or co-supervision. In 2008 he was awarded a DST/NRF Research Chair in Astrophysics and Space Physics. During 2010 he presented three invited talks at international conferences. He also held two technology-based patents.

Outside of astrophysics, Prof De Jager had a keen interest in the postal history of South Africa. He received an award for his exhibit entitled "Centenary Celebration of the Postal History of the Union of South Africa" during the "Joburg 2010 International Stamp Show", held in October in Johannesburg.

Prof De Jager is survived by his wife, Estie, and thirteen-year old daughter, Danél. ☆

Visit to Super-Kamiokande

Ian Glass

The recent IRSF conference in Japan was followed by an opportunity for the South African and other overseas delegates to visit the Kamioka Observatory in the mountains of Gifu province. This world-famous installation is centred around a detector that searches for the elusive neutrino 'fundamental particles'. Though they have been 'known' of since the 1930s, they interact only to the slightest extent with other matter and so are extremely difficult to detect.

The detector is situated hundreds of metres deep within a mountain, in what was formerly a mine. The visitors drove by bus through a tunnel, into the area where the Observatory is situated, and had to wear hard hats! The rock above absorbs the ordinary charged cosmic ray particles and cosmic gamma-rays. Special efforts are also made to avoid contamination by traces of radon gas, a radioactive substance often found in deep mines.

The detector is a huge stainless steel tank containing 50 000 tons of continuously purified water. It is in the form of a cylinder 39.3 m in diameter and 41.4 m tall. It is lined on the top, walls and bottom by 11 129 gigantic blue-sensitive photomultiplier tubes. Outside the main volume is an outer detector with 1 885 tubes that serves to detect and reject any energetic particles that arrive in spite of the massive shielding provided by the mountain.

Any neutrino that happens to interact with the water will generate a charged particle. If energetic enough, this particle will travel faster than light in the water and give rise to a shock wave of blue light called Cerenkov radiation. This light is then detected by the photomultipliers.

The thermonuclear reactions in the core of the Sun are a powerful source of neutrinos and from the observed fluxes the validity of solar models can be checked. Among the results obtained so far are evidence for a finite mass for the neutrino as well as the detection of 'neutrino oscillations'. In February 1987 the supernova SN1987A caused a large flux of neutrinos, some of which were detected by the original Kamiokande detector.

There are many other experiments at the Kamioka Observatory under way to understand the nature of neutrinos, to try to detect proton decays and to find dark matter. ☆

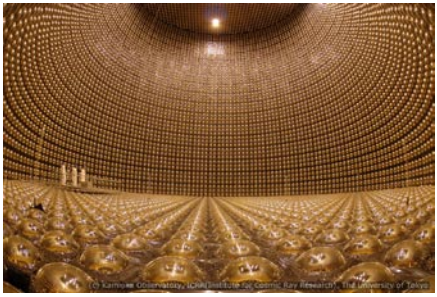

Image credit: Kamioka Observatory, ICRR (Institute for Cosmic Ray Research), The University of Tokyo.