

AWARDS, HONOURS AND ACHIEVEMENTS

- SAIP De Beers Gold Medal of the SA Institute of Physics (2014)
- Elected Fellow of the Institute of Physics (UK) in 1998; Emeritus Fellow since 2011
- Secretary of the Plasma Physics Commission of the International Union of Pure and Applied Physics (1993 – 1996)

DEFINING MOMENT

Having the opportunity to do a PhD at Cambridge, an experience that was challenging but stimulating and exciting.

WHAT PEOPLE MIGHT NOT KNOW

“One of my big hobbies at school was cricket statistics. I went to the newspapers in Cape Town and offered them my statistics and it developed into a lucrative hobby as I became the resident cricket statistician for two newspapers.”

A LIFE DEDICATED TO DEVELOPING PHYSICS IN SOUTH AFRICA

Like the stories of many prominent physicists, Manfred Hellberg's fascination with the universe started at a very young age, and with the help of a committed teacher he found his calling. “As a kid I was always curious about things and where they came from. In fact, in my junior high school days I was also very interested in history and biology – I had very broad interests.

“I was drawn to theoretical physics by a teacher who never actually taught me,” says Hellberg. “I was at Rondebosch Boys' High and there was an excellent mathematics teacher who was very short and was affectionately known as 'Tickey' de Jager.” Hellberg recalls how Tickey would give afternoon talks about atomic and nuclear physics. “He gave lectures which were outside the curriculum, in fact they were based on a university textbook at senior undergraduate level,” he says. “He had a degree in physics and mathematics, and that strongly influenced my interest in theoretical physics.”

When Hellberg got to university, he had already decided that he would study mathematics and physics, and that he wanted to be an academic. “I was actually interested in theoretical nuclear physics as an undergraduate, and

I wanted to do a Master's in it.” But he changed fields as Professor John Irving, the professor of Theoretical Physics at the University of Cape Town (UCT) in the late 1950s, had switched his own research from theoretical nuclear to plasma physics.

The defining moment in his career came when he received a scholarship to go to Cambridge to complete his PhD. “It was a totally different ballpark when I got there; everybody around me was very smart indeed: For instance, I shared an office with Stephen Hawking. I also took every opportunity to go to international conferences.”

He considers the networking he did at those conferences incredibly important since not many South African academics had this kind of exposure in the 1960s. After completing his PhD in 1965, he took up a post as a lecturer in physics at the University of Natal in Durban (now the University of KwaZulu-Natal). During his career he played an active role in student development, teaching development and research development, and was involved in university leadership.

His research on waves in plasmas (high-temperature ionized gases, found for instance in the space environment), together with students and international collaborators, included some pioneering works that have led to numerous citations and significant international recognition.

Over the years, he has also contributed to the development of physics and science in South Africa, serving on the Council of the SA Institute of Physics for ten years. When the South African Nuclear Energy Corporation's (Necsa) laser-based isotope separation project was threatened with closure in the late 1990s, Hellberg stepped in as President of the South African Institute of Physics to garner support from the Department of Science and Technology (DST), now Department of Science and Innovation as well as the National Research Foundation (NRF). He argued that the laser facilities and expertise should not be lost, ultimately leading to the successful National Laser Centre, on whose board he served for six years. He refuses to take all the praise for that and many of his other achievements, instead emphasising the contributions of many colleagues and organisations whose “ears were receptive to his pleas”.



TO THE RESCUE

Another important contribution came a few years later, as fears were mounting within the physics community that a drop in student numbers would weaken the future of physics and science in South Africa. The South African Institute of Physics (SAIP) Council once again obtained the support of DST and NRF, and in 2004, the latter appointed an eight-member international panel with Hellberg as convenor to look into shaping the future of physics in South Africa.

An intensive two weeks of travelling around the country, involving wide-ranging consultation with all stakeholders led to a 110-page report with recommendations aimed at concerned groups such as funders and university physics departments. "Many of the proposals fell on receptive ears, and thanks to the continued drive by successive SAIP Councils, and support from the DST and NRF, a number of important recommendations came to fruition," he says.

In 2010, then Minister Naledi Pandor appointed Hellberg to prepare a report on strategies and policies to develop astronomy in South Africa. He again consulted widely and was supported by a small expert group, including renowned cosmologist Professor George Ellis.

Internationally too, Hellberg's expertise has been in demand. He served on the Plasma Physics Commission of the International Union of Pure and Applied Physics (IUPAP) for three terms, on the editorial board of the *Plasma Physics*

and *Controlled Fusion Journal*, and on the Editorial Advisory Panel for the IOP Plasma Physics book series from 1990 to 1996.

He has been on advisory committees of numerous international meetings, including 25 years of service to the International Congress on Plasma Physics (ICPP), covering 13 conferences. Together with his former student and later colleague, Professor Ramesh Bharuthram, he also brought the International Conference on the Physics of Dusty Plasmas to Durban in 2002. Hellberg was elected a Fellow of the University of Natal (now the University of KwaZulu-Natal) and the Royal Society of South Africa in 1992 and the Institute of Physics in London six years later. In 2000, he was elected a Member of the Academy of Science of South Africa (ASSAf) and served on its Council from 2004 to 2010.

Elected an Honorary Member of South African Institute of Physics (SAIP) for services to the institute in 2002, he received its highest honour, the SAIP De Beers Gold Medal in 2014 for his outstanding, internationally recognised research career in plasma physics, and the numerous contributions he has made in his service to physics in South Africa.

Since his 'retirement' more than a decade ago, Hellberg's research has flourished and his citation rate has regularly exceeded 300 annually. However, he is slowing down and is looking forward to spending more time with his wife Karin who has patiently supported him for more than half a century as he pursued his love of research and helped build and invigorate the field of physics in South Africa.



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A. Academy of Science of South Africa (ASSAf) Publications

C. ASSAf Policymakers' Booklets

2020

Legends of South African Science II

Academy of Science of South Africa (ASSAf)

Academy of Science of South Africa (ASSAf)

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