DEPARTEMENT FISIKA
DEPARTMENT OF PHYSICS

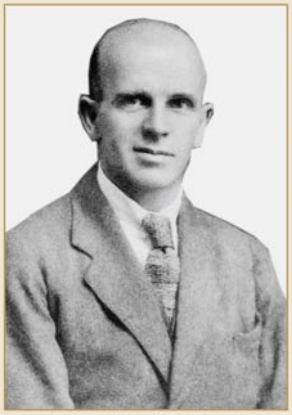
Geskiedenis
History

PHYSICS AT THE UNIVERSITY OF PRETORIA

Ou Lettere Gebou

The University of Pretoria (then known as the Transvaal University College) was started in 1908 with the first lecturer in Physics Professor D.F. du T. Malherbe. In addition to physics, he also had to teach Chemistry (he eventually became Head of Chemistry), Mathematics and Geology. In December 1908 a professorate in "Mathematics and Physics" in Pretoria , was offered to Prof P.G. Gundry from the Royal Agricultural College, Cirencester, England. Until 1912 Physics and Mathematics were incorporated in one department. Thereafter Prof. Gundry became the Head of only the Department of Physics with Prof AE du Toit the Head of Mathematics. Applied Mathematics was still classified under the Department of Physics until 1935.

The Department moved from the old State Gymnasium building in 1911 where it was housed, to accommodate it, together with Chemistry, in the southern wing of the "Ou Lettere" building which was then known as the Science Block. When the "new" Science building was completed in 1925 Physics reallocated and remained there until 1954.



Prof PG Gundry (HOD 1908 – 1929)

Prof Gundry's service at the T.U.C. was interrupted during the First World War, from 1915 until 1919, when he joined the Union Forces that operated in German South West Africa. Later he also did war service in Europe. In 1919 he was appointed the Faculty's first Dean and in 1927 Prof Gundry went to Europe on leave. There he became seriously ill in 1928. Although he returned later in the year, he never really recovered fully. In September 1929 he passed away. Prof. Gundry was a willing servant of the T.U.C. and a respected colleague.

Prof JS van der Lingen (HOD 1930 – 1950)

Dr J.S. van der Lingen, senior lecturer in Applied Physics at the University of Cape Town, was appointed as prof. Gundry's successor from 1930. Prof. Steph van der Lingen was already an experienced lecturer when he came to Pretoria. He was destined to become, in his 20-year term of office, one of the most colourful professor-characters of the University. His jokes and sayings live on among his alumnus students. He started a teacher's career in Cradock and Kroonstad; in America he was appointed a lecturer in Biophysics and thereafter lectured at the University of Cape Town. As departmental head he was a sympathetic person with his colleagues and students and he delivered lively lectures.

From 1930 he immediately became involved in the university's internal politics as an advocate for Afrikaans. Because he was a relentless fighter for his cause, he often created bitter enemies. Although he had an amazing knowledge of fundamental, classical Physics, it was difficult for him to adapt to the new era of Physics that started just when he went to Pretoria. This is the reason why his last years almost deteriorated in a struggle against the modern developments in Physics in which he stressed superficiality and incompletion.

Prof. Van der Lingen died suddenly on 29 June 1950. The fact that research, in his time, did not always flourished must however be blamed to some extent on limited means and apparatus – a situation that was only changed in the post-war years with the establishment of the C.S.I.R.

1975
Dr V Voss, mev Voss, Dr RGP Voss en Prof JH van der Merwe.

Dr V VOS

A well-known lecturer in the Department of Physics was **Dr. Vivien Vos**. He was one of the early T.U.C. students who, after graduating in the U.S.A., was attached to his Alma Mater from 1919. He was appointed as lecturer in 1920 and deputized as Departmental Head on various occasions during the following 34 years. He served in both World Wars – with distinction in the second. He also wrote the first textbook in Afrikaans for first year physics. After reaching retiring age, Dr. Vivien Vos left the Department at the end of 1954. After his retirement he still remained in the Department in a temporarary capacity until 1956.

Prof HAW Verleger (HOD 1951 – 1971)

Prof. H.A.W. Verleger was appointed as the successor to Prof van der Lingen at the beginning of 1951. Heinrich August Wilhelm Verleger was born in 1908 in Bingerbrück-am-Rhein, in Germany. He received his education at the Technische Hochschule in Darmstadt, the Realgymnasium in Wiesbaden and at the Universities of Würzburg, Frankfurt and Giessen. He completed his studies at the latter with the DPhil degree in 1930.

Thereafter he worked as a technical assistant at the University of Giessen and then at the Technical University of Darmstadt, where he acquired the Dr Rer Nat Habil degree. From 1936 to 1941 he was the research officer at the Physikalisch Technische Reichsanstalt, in Berlin, as well as lecturer in Physics at the University of Berlin. In 1941 he was appointed Professor in Physics at the University of Tübingen where he also experienced the worst years of war. In 1949 Prof. Verleger immigrated to South Africa with his family to join the C.S.I.R as research officer until his appointment on 1 January 1951 at the University of Pretoria.

Personeel 1959. Departement Fisika:
Agter: JG Koen, Klaas Els, Hittos, Heymann, G van Zyl, Prof Prinsloo, J Prins, C Engelbrecht, De Vries.
Voor: I Kotzè, Von Wielligh, L Strauss, Prof Verleger, I Dormehl, Burdzik, Lemmer, Friedland, Prekel.

After his appointment Prof. Verleger especially campaigned to find adequate and purposeful accommodation for the Department of Physics and at the end of 1954 the Department started moving to the building for Mathematics and Physical Sciences.

Prof. Vergeler is regarded as a scientist of world quality whose publications in international as well as in South African magazines, command authority. He mastered Afrikaans quickly and was responsible for four Afrikaans textbooks on Physics. Under his leadership the Department of Physics made great progress in

1955:
Doktorandi: Drs LA Prinsloo, DJ Fourie en AP Steyn. *Promotor:* Prof HAW Verleger.

education as well as research. During his tenure from 1951 to 1971, 87 MA degrees and 25 doctorates were awarded by the Department. Prof Verleger was directly involved with the majority of these graduates.

1967
Dr HL Gaigher, Prof H Wilsdorf (besoeker van Virginia, VSA), Prof HAW Verleger

Research in nuclear physics was stimulated during this time by the acquisition of a Van der Graaff accelerator and an electron microscope.

In 1964 with the installation of the accelerator, Prof Verleger wrote: "It is envisaged to use this apparatus for both teaching as well as research work…... The erection of the reactor itself will be especially utilised for research purposes and could be developed into a training center for reactor physicists and technicians especially because the University of Pretoria is extremely strategically located between the Council of Atomic Energy at Pelindaba and the C.S.I.R ."

Prof. Verleger died on 26 September 1988.

Prof. Verleger did not neglect theoretical physics. A future Head of the Department, Dr. J. H. van der Merwe was first appointed as Senior Lecturer in Theoretical Physics in 1952. At the beginning of 1957 he was promoted to Associate Professor.

Besides Prof. Verleger, there were only three senior and four ordinary lecturers in the Department in 1960. Of the senior lecturers L.A. Prinsloo was promoted to associate professor in 1962 and to a professor in 1971. Lourens Abraham Prinsloo, who was born in 1914 in Pretoria, matriculated at the Middelburg High School. Thereafter he received the following degrees at the University of Pretoria: BSc 1934, MSc 1936, HED 1936 and DSc 1955. In 1939 he studied at the University of Göttingen with a Von Humbolt exchange bursary. After having been a lecturer at the Pretoria Technical College, from 1937 to 1945, he joined the University of Pretoria as Lecturer in Physics and in 1956 he was promoted to Senior Lecturer. Besides a number of scientific publications, some of them together with Prof. Verleger, he was also the author and associate writer of several textbooks for schools and students. He also served for many years as Moderator of the Natural Sciences and Chemistry exams of the Transvaal Education Department and the Joint Matriculation Board. He was a co-author of the Dictionary of Physics that was published in 1977, as well as co-author of the abbreviations of physics and related units, a publication of the Suid Afrikaanse Akademie vir Wetenskap en Kuns (Eng. South African Academy of Science and Art)

1980
Prof LA Prinsloo

Prof. Prinsloo was also a well-known figure on the rugby fields of the University as trainer of the under-19 and -20 teams. He was chairman of the selection committee for the Northern Transvaal under-20 team. After a 33-year term of office and having reached retiring age, he left the University in 1979.

Prof JH van der Merwe (HOD 1972 – 1978)

Prof. Verleger was succeeded in 1972 by **Prof. J.H. van der Merwe.** Johannes Hendrik van der Merwe was born in 1922 in Humpata, Angola. After matriculating at the Windhoek High School in 1940, he was awarded the degrees BSc (1943) and MSc (1945) at the University of Stellenbosch, both with distinction. In 1946 he was appointed junior lecturer at this university, but a year later he accepted an appointment at the C.S.I.R. At the end of 1947 he left to study at the University of Bristol, where he was awarded a DPhil degree in 1950. In Bristol he studied under the Nobel-Laureat Prof Sir Neville Mott and the famour Prof F.C. Frank. In his doctorate he laid the foundations of the theory of epitaxy, for which he eventually became world-famous.

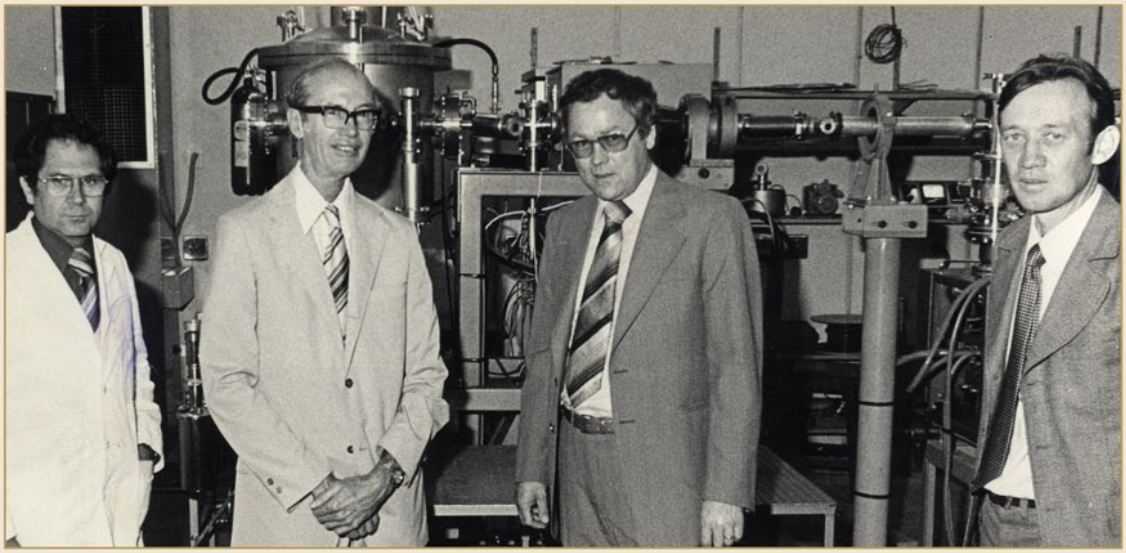
Personeel 1972
V.l.n.r. voor: Julie-Ann v d Hoven, Prof JH v d Merwe, Bets Weideman, NG v d Berg, W Stinnes, HL Gaigher, L Strauss, Frans Fourie, mnr Siegling, J Prins, E Friedland, F Voigts, G van Wyk, HW Alberts, TB Scheffler, GJ Roux, JG Koen, G Scholtz, JM Lombaard, JB Malherbe.

He returned to the C.S.I.R. in 1949, but accepted an appointment as senior lecturer in Physics at the University of Pretoria in 1952. In 1956 he was promoted to associate professor. In the interim he obtained the MSc degree in Mathematics in 1955 at the University of Pretoria. In 1964 he moved to Port Elizabeth to head the Department of Applied Mathematics and Physics. In 1966 he returned to Pretoria as Professor in Applied Mathematics and Physics at the University of South Africa and on 1 January 1972 he returned to the University of Pretoria to become Professor in Physics and Head of the Department of Physics.

As a scientist Prof. van der Merwe is held in the highest esteem. In 1967 he received the Havenga prize from the South African Academy for Science and Art. With the establishment of the Institute of Microstructures at the University (later named the Carl and Emily Fuchs Institute for Micro Electronics) he became its first Director and later Deputy Director. He is seen as a world renowned authority in the field of epitaxy. Epitaxy has many applications, especially in the development and manufacture of micro-electronic circuits and devices. In 1978 Prof van der Merwe retired, at his own request, as Head of the Department of Physics in order to pay more attention to research and the teaching of post-graduate students. He remained on as a full professor in the Department until his retirement.

He also received the EW Müller award from the University of Wisconsin-Milwaukee in 1983 and the De Beers Gold Medal for Physics in 1984. He was awarded three honorary doctorate degrees: UP, Unisa and UPE. In 1990 he was appointed as Professor extraordinarius at Unisa. He obtained several gold medals as well as a A-grading for research from the FRD. Presently he is an honorary professor in Physics at UP.

1976
Prof E Friedland, Prof E Recknagel (besoeker), Prof JH van der Merwe.

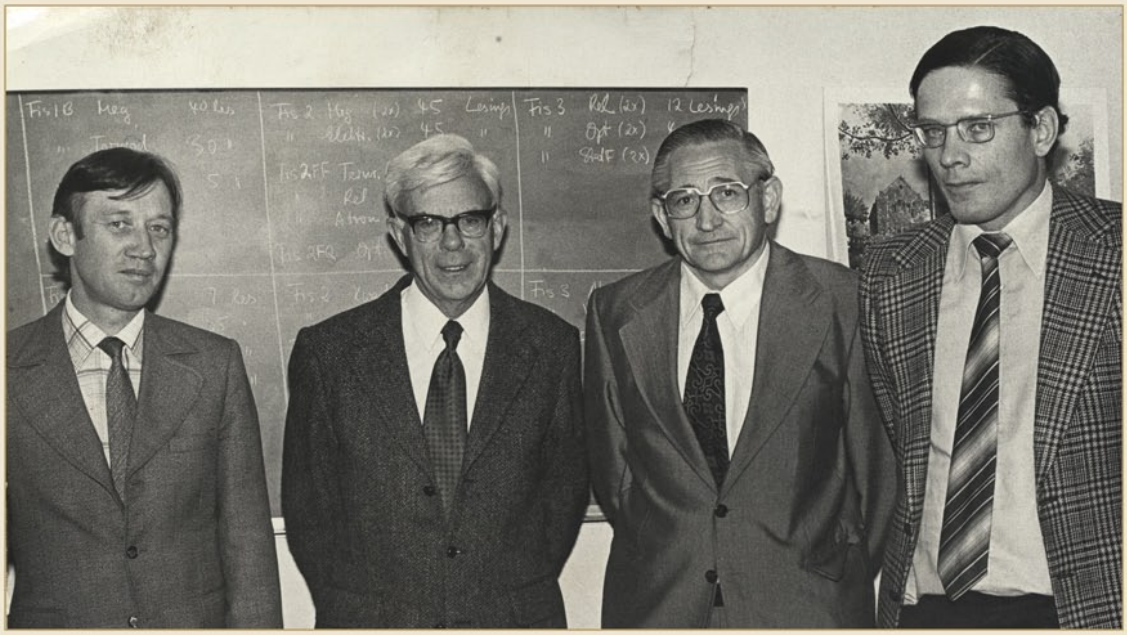


1978
Dr JM Lombaard, Prof JH van der Merwe, Prof H Appel (Univ. Karlsruhe), Prof E Friedland.

Prof EKH Friedland (HOD 1980 – 1998)

At the beginning of 1980 **Prof E.K.H. Friedland** succeeded Prof van der Merwe as Professor in Physics and Head of the Department of Physics. Erich Karl Helmut Friedland was born in 1933 in Neumunster, Germany. After completing his matric in Duisburg, he moved to South Africa where he was appointed to the National Physics Laboratory of the C.S.I.R. in 1952. He studied at the extra-mural division of the University of Pretoria and was awarded the BSc degree in Physics and Chemistry in 1956 and an MSc degree in Physics in 1958. In the meanwhile he accepted the post of Technical Assistant at the University of Pretoria where he was promoted to Lecturer in 1959 and Senior Lecturer in 1967. He was awarded his DSc degree in 1965 under the guidance of Associate Prof. H.R. Lemmer. The following year he worked as guest scientist at the Kernforschungszentrum (Centre for Nuclear Physics Research) in Karlsruhe, Germany.

After becoming Assistant Professor in 1972, Prof. Friedland worked at the Max Planck Institut für Kernphysik (Max-Planck Institute for Nuclaer Physics) in Heidelberg, Germany in 1974. This was followed in 1979 by a second sojourn in Karlsruhe. In addition to this, since 1974, he also visited laboratories in the U.S.A., England, the Netherlands and Denmark. His field of interest is especially the basic and applied nuclear physics.



1980
Proff Friedland, Anderson, van Rooyen en Dr Scheffler.

Seeing that Physics I was also a basic requirement for various other study fields (at the time it was divided into courses A1, B1 and C1) the Department of Physics was one of the largest in the Faculty. Unfortunately there was the complaint that too few students continue to Physics II and post-graduate studies.

In 1960 there were 10 lecturers attached to the Faculty among whom a Professor (H. Verleger) and an Asociate Professor (J.H. van der Merwe). In 1982 the lecturing staff comprised 21 among whom three Professors (E.K.H. Friedland, J.H. van der Merwe and E. van Rooyen) and four Associate Professors (C.A.B.Ball, J.G. Koen, L. Strauss and J.M. Lombaard). From 1977 Prof. van Rooyen filled the professorate in Optics. Prof Koen had already been attached to the Department since 1960. Honorary Professors were C.L. Clark and L.J. le Roux, 1973, and C.A. Engelbrecht, 1974-1980. Additional and Associate Professors were: H.R. Lemmer, 1964-65, J.J. Henning, 1967-1970, and H.L. Gaigher, 1976-1980.

1980. Personeel van UP Fisika Departement
Proff van der Merwe, Friedland, Prinsloo, Fourie, Koen en van Rooyen.

During the 1980's a worldwide movement started where emphasis shifted in the research priorities of Physics. Nuclear Physics that dominated the interest of researchers in the 50's and 60's, resulting in an extremely rapid development, already in the 70's became a field where few really interesting problems remained. The result was that during the view period (1983-1992), funding for research and development in the important developed industrial countries, became less available for problems relating to Nuclear Physics. The majority of the low and medium energy accelerators was thus closed down or adapted to be utilized for other study directions. Simultaneously Material Sciences increasingly came to the fore – a development that was strongly stimulated by the importance of new materials for high technology industries. A particular characteristic of Material Science is its interdisciplinary nature that often necessitated close co-operation between physicists, scientists and engineers.

1983. Besoeker
Proff E Friedland, WA Jesser (Professor of Materials Science, University of Virginia) en JH van der Merwe

Another research field, which enjoyed great interest in the view period, was High Energy Physics and Particle Physics that attempted to answer questions about the being and origin of the universe. The development of powerful computers and new accelerator concepts caused this field to develop especially fast. This led to large-scale international co-operation in this field.

Besides the basic function of training physical scientists, the Department of Physics also provided a fundamental contribution

in the education of students in a number of other professional directions of which Engineering, Medical Sciences and Agriculture were the most important. Consequently a large number of service courses were offered by the Department to students of whom the majority did not belong to the Faculty of Natural Sciences.

While it was probably imperative to offer these students lectures that specifically met their subject requirements, a fragmentation of courses nevertheless occurred that placed an unusual high lecturing obligation on the Department. A number of service courses, especially for small groups that often consisted just of a small number of students, led to an ineffectual utilizing of staff. During the view period this situation was critically reviewed. After consultations with the involved departments or faculties a number of the service courses were incorporated or discontinued.

1983
Proff Friedland, van der Schijff, Zietsman, Geerk, Chu en Lombaard.

The Department had already, since the 1950's, regarded research as one of the two main functions of a full-fledged university and accordingly supported its personnel as well as encouraging them

1980. Oudstudente
Prof van Rooyen, Drr de Lange, de Vries, Von Wielligh, Peters, v d Walt, Savage en Prof Friedland.

The exceptionally fast development of Physics necessitated that the courses continuously had to be adapted for students in order to enable them to compete internationally. This objective, that especially influenced the post-graduate studies, made it imperative that the staff continuously was kept up to date concerning new thought directions and research findings. This was one of the reasons why Wilhelm von Humbolt, already early in the 19th century urged that education and research should never be separated. Besides this generally valid proposition, local developments that directly influenced the students' interest in the subject field, also had to be considered. The most important event in this regard was surely the restructuring of the Scientific Industrial Research Council (CSIR) and the Atomic Energy Corporation (AEC, current (2008) known as NECSA) as well as the curtailing of Armscor's activities which were detrimental to the creation of work opportunities for physicists in South Africa. This resulted in the diminishing of pre- and post-graduate students majoring in Physics towards the end of the 1980s. The changing circumstances with the implementing of a new policy concerning the financing of research in universities by the Foundation for Research Development (FRD) however also created new possibilities.

in this field. One of the weaknesses however was that a number of individual research projects developed in time which were not connected to each other. This state of affairs hampered the purposeful utilizing of existing funds and facilities, as well as the creation of a stimulating research climate. Taking into account the international and local developments, it was however a priority of the Department to concentrate it's proven research potential and consolidate them around some single main themes. With the choice of the themes, together with the existing infrastructure and ability of the Department, the relevance of the subject also had to be taken into account, seeing that the latter was not only important for external funding, but also as a successful recruiting instrument that could be used for attracting post-graduate students.

Against this background it was reasonably clear that the Material Sciences would be the one subject that would satisfy all the above-mentioned expectations. What made this choice very attractive was the fact that the existing expertise of solid state physics in the Department could be eminently utilised for this, whilst at the same time the Department's Van de Graaf Accelerator was transferred, at relatively low costs, to an adequate analytical ionic beam for

surface studies. This was a research area that would unlatch wide international attention. To enforce the Department's knowledge of electronic material, a series of sophisticated electrical characteristic facilities was been established. After the appointment of Prof. F.D. Auret, as an expert in this field, the Department quickly received recognition as one of the foremost semiconductor laboratories in South Africa.

Furthermore, the Department had to deal with the retirement of Prof. J.H. van der Merwe, who was highly regarded as a theoretical physicist both locally and internationally. Prof van der Merwe was the mentor of the Theoretical Physics group. With the appointment of Prof. H.G. Miller, a worthy successor was found for the Theoretical Group who, with his knowledge of the Nuclear and Particle Physics, also made the Department internationally known in this important field.

The Experimental as well as the Theoretical Groups in the Department worked in collaboration with local groups and those from abroad at different institutes and universities on a number of research projects. For many years there had been fruitful co-operation with the Schonland Institute as well as the Physics Department of the University of the Witwatersrand. In the beginning 1990s there were collaborations between the Department's experimental group and similar groups at the C.S.I.R., the University of the Orange Free State and the University of Port Elizabeth as well as groups at the Max Planck Institute in Heidelberg and Stuttgart and the DBP Laboratory in Darmstadt, Germany. The Theoretical Group also entered into similar connections with the University of Buenos Aires in Argentina, the University of Moscow in Russia and the Academica Sinica in Taiwan. These connections led to a significant number of mutual visits resulting in a whole series of common publications. Members of the Department were also actively involved with national scientific organizations and served, among others, on the boards of the South African Institute of Physics, the South African Academy of Science and Art and the South African Foundation of Natural Sciences. The annual conferences of the South African Institute of Physics were organized and hosted by the Department at the University of Pretoria in 1983 and 1989.

In 1985 the Department of Physics moved to a new building opening up more space for the increased number of research equipment.

To popularize physics and thereby attract more students Prof. L. Strauss in the 70's established the Exploratorium in the Department. A major advance for the Exploratorium was the reallocation of the Department to a new building in 1985. Considerably more space then became available. A small auditorium was , among others, equipped for presentations and demonstrations for school classes. Furthermore the Department installed a Camera Obscura on the roof of the NS1 building with the assistance of ELOPTRO. Because the original aim of the Exploratorium was to further the interest of scholars in Natural Sciences as a whole, it was move out of Physics and placed administratively as a faculty organisation under the direct control of the Dean.

1981. Exploratorium
Me Rudi Horak, Prof van Schalkwyk, Prof L Strauss.

1983. SAIF Exhibition by UP Physics
Prof Friedland, Dr Reitmann, Prof Chu, Dr Rose, Dr Geerk, Dr Mingay, Dr Feast.

1987. Besoekers
A Seger (Stuttgart), E Friedland (UP), C Wiedner (Heidelberg).

In the 1980s and early 1990s two of the Department's personnel received prestigious awards. The first was Prof J.H. van der Merwe, who received the Gold Medal of the South African Institute of Physics in 1984; the second was dr. R.M.Carter, who received the President's Award in 1990 from the FRD (Foundation for Research Development). Within the framework of the FRD's special programme, Proff. F.D.Auret and E. Friedland received a grant of R150 000 per annum for research about electronic materials for the period from 1990 to 1994. Ten staff members, of whom three extensively, were also assisted financially within the core programme of the FRD.

In the beginning of the 1990s, besides the above mentioned staff members the Department comprised of Proff. H.W. Alberts, H.L. Gaigher, J.B. Malherbe, J.F. Brink and L.J. Bredell as well as seven senior lecturers and two lecturers assisted by two technicians, a full-time and a part-time secretary and ten technical assistants.

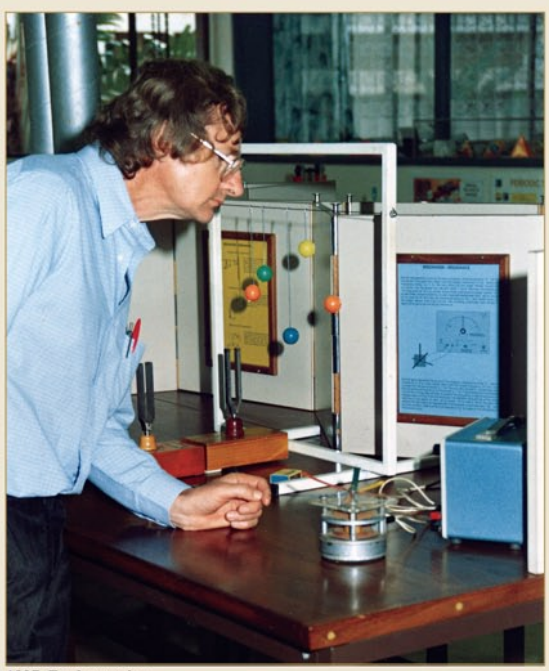
In 1998 Prof Friedland retired after 18 years as the Department Head and was succeeded by Prof J.B. Malherbe. Prof Malherbe was also appointed from 2000 as the Chairperson of the newly founded School of Physical Sciences. This School consisted of the Departments of Earth Sciences, Chemistry, Physics, Geography and Geoinformatic Sciences, the Centre for Science Education, the Gold Fields Centre, the Centre for Geoinformatic Systems, the Laboratory for Microscopy and Microanalysis and the Institute for Applied Materials.

1992. SAIF konferensie by UP
Dr KA Müller (Nobelprys wenner 1987: IBM - Rüschlikon, Switzerland, Prof E Friedland.

April 1988: Ion Beam Analysis Conference at Wits (visit to UP)
Friedland (UP), WK Chu (Univ North Carolina, USA), O Meyer (Karlsruhe, Germany), JH van der Merwe (UP), S Kalbitzer (Heidelberg, Germany), N Sauer (UP, Dean), E Taglauer (München, Germany), JP Biersack (Berlin, Germany), H Brongersma (Eindhoven, Netherlands).

Prof JB Malherbe (HOD 1998 -)

Johan Brand Malherbe was born in Gobabis, Namibia and matriculated in 1964 in Schweizer-Reneke. He was awarded the degrees BSc in Physics and Mathematics (1968), MSc in Physics (1970) and a DSc in Physics (1978), all at the University of Pretoria. Most of his working career was also spent at the University of Pretoria. He was appointed as Lecturer in 1971 and was promoted to Senior Research Officer in 1978. He became an Associated Professor in 1985 and Professor in 1990. As guest scientist he worked at several institutions, such as the Max Planck Institute of Metallurgy in Stuttgart, the Research Institute of the German Post Office in Darmstadt, the Technical University of Braunschweig in Germany and the Odense University in Denmark. Prof. Malherbe is a surface scientist, specialising in ion solid interactions and has published in nearly every aspect of this field. In the field of nano-structures produced on a surface by ion bombardment, he was one of the early scientists working in this field and consequently has written several review papers. He has also been very active in promoting and doing research in applied physics. He has been a Chairman/Committee member/member of numerous societies, academic societies and the staff association of the University of Pretoria. He also served on National Advisory or Evaluation Committees for FRD and NRF, SAIP, SACNASP, NSTF and the Department of Arts, Culture, Science and Technology, national staff association, academic, scientific, university, faculty, departmental- and other committees. He was President of the South African Institute of Physics and Chairperson of the International Committee of Atomic Collisions in Solids from 2006 – 2008.



1997. Exploratorium
Prof J Brink

1997.
Prof M Braun, Prof J van Staden, Dr A Carr.

Although the 20th century has often been typified as the century of physics, its image (and also that of the other basic sciences) began changing completely, especially in the last decade of the century. The number of students taking this subject has fallen dramatically worldwide, in contrast to the numbers in the professional occupations. The University was not left unscathed by this trend and by 1998 a nadir was reached in the number of undergraduate students. After 1998 this downward trend was reversed by active marketing and changing of the curricula to incorporate applied physics and computer modeling courses.

The research output of the Department rose in the period 1993-2000. This output was obtained with an average teaching staff complement of 17 who maintained a strong culture of research – so much so that the Department is among the ten most productive research departments at the University.

RESEARCH OUTPUT

Year	Scientific publications	Conference contributions
1993	35	35
1994	26	41
1995	23	48
1996	27	38
1997	24	33
1998	33	42
1999	36	57
2000	40	48

The high research output was assisted by numerous projects with leading scientists in the developed countries such as the USA and Britain. Formal bilateral agreements were also concluded with scientists in Belgium, Denmark, Germany, France, Hungary and Poland. To remain locally relevant, various projects were undertaken jointly with researchers at other South African universities – especially the historically black universities. These cooperation agreements led to visits to the department and lectures given by many leading physicists.

The research concentrates mainly on solid state physics with particular emphasis on electronic materials. A start has been made

Personeel 1997.
V.l.n.r Agter: R Nel, T Hauser, B Scheffler, R v Weele, G Pretorius, G Chabangu
V.l.n.r Tweede Ry van Agter: L Bredell, N vd Berg, H Kunert, M Hayes, A Shihlane, A van den Heever
V.l.n.r Derde Ry van Agter: H Nordhoff, S Goodman, W Meyer, N Davidson, J Brink, G Myburg
Voor: H Alberts, J Malherbe, A Schickerling, E Friedland, C Vos, H Gaigher, D Auret

with research into polymers. Although many of the research projects can be regarded as basic innovative research, the vast majority of projects are aimed at possible applications in the future. Research in a few applied fields (namely solar energy and desalination) has led to four patents in the period under review.

Successive Presidents of the SAIF
Prof J Malherbe, Prof Sellschop and Prof M Helberg

The Department was also actively involved in projects and the selection of individuals by the former FRD, since replaced by the NRF (National research Foundation). Consequently, most of the research funds were received from this source. Money obtained from the above-mentioned international bilateral research agreements also contributed substantially to research funds.

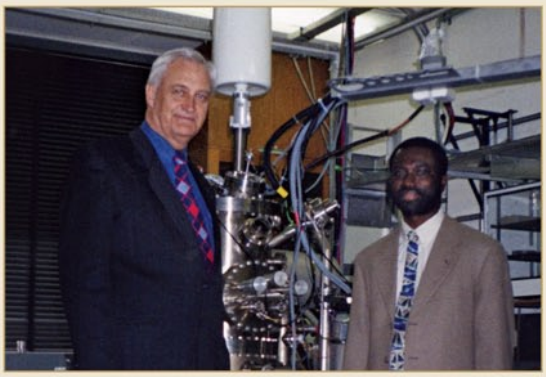
2005. Women in Physics in SA Launch, Blue Water Hotel

In 2000 the Department had six B-rated (Profs F D Auret, R M Carter, E Friedland, S A Goodman, J B Malherbe and H G Miller) and three C-rated (Profs D J Brink and G Myburg as well as Dr H W Kunert) staff members.

Profs Auret, Friedland and Malherbe were invited to write overview articles in leading scientific journals and chapters in books. Many members of the lecturing staff also serve on international and national scientific committees. Various lectures were also given at international and national scientific conferences.

Since 2000 the strong emphasis in the Department on research has continued with a subsequent growth in output. Although the backbone of the research remained ion/solid interactions,

internationally competitive research has been done on theoretical nuclear and particle physics, non-extensive thermodynamics, physics modeling, nanotechnology and detector physics. The appointment of Prof AR Plastino from Argentina has lead to the Department becoming a leading centre in quantum information theory. New fields of research include biophysics and astronomy. The quality of the research in all the above fields undoubtedly ensured that the Department remained internationally competitive. This together with the emphasis on providing a quality service to the students in physics has made the Department of Physics at the University of Pretoria to remain one of the major physics departments in the country.



Prof J Malherbe and Dr John Kudjoe, visitor from University of York.

2006.
Prof Lotz Strauss, Dr Walter Meyer, Prof Danie Auret met Meyer se PhD toekenning.

Graduation Day for Physics students 2008.