



Department of
Science and
Technology

SOUTHERN AFRICA: MAPPING THE UNIVERSE



THE SOUTH AFRICAN ASTRONOMICAL OBSERVATORY

The South African Astronomical Observatory (SAAO) has its headquarters in Cape Town and a field station at Sutherland in the Karoo. SAAO dates back to 1820, when the Royal Observatory was established at the Cape. The telescopes at Sutherland are all reflectors with mirrors of 0.5, 0.75, 1.0 and 1.9-m diameter. The SAAO's work is representative of much of modern astrophysics, with activity in areas of solar system studies, solar physics, stellar astrophysics, Galactic structure, Magellanic Cloud studies, and extragalactic astronomy. Much of the work is done in collaboration with astronomers from over 20 countries.

Tel: (021) 447 0025
Fax: (021) 447 3639
www.saao.ac.za

THE SOUTHERN AFRICAN LARGE TELESCOPE



The Southern African Large Telescope (SALT) is being built at the SAAO's site in Sutherland and will be the biggest single optical telescope in the southern hemisphere when it is completed in 2005. SALT will be able to record distant stars, galaxies and quasars a billion times too faint to see with the unaided eye. SALT will see back to time when the universe was 10% its current age, when the first galaxies were forming around 1.5 billion years after the Big Bang.

Tel: (021) 460 6280
Fax: (021) 447 1312
www.salt.ac.za

SQUARE KILOMETRE ARRAY

South Africa is currently competing with other countries to host the Square Kilometre Array (SKA). SKA is a 1 billion dollar international project to create an array of antennas for detecting radio waves that will have a receiving area of one square kilometre. This area is 100 times larger than the biggest receiving surface that now exists. If South Africa wins the bid, the main part of the SKA will be built in the Northern Cape.

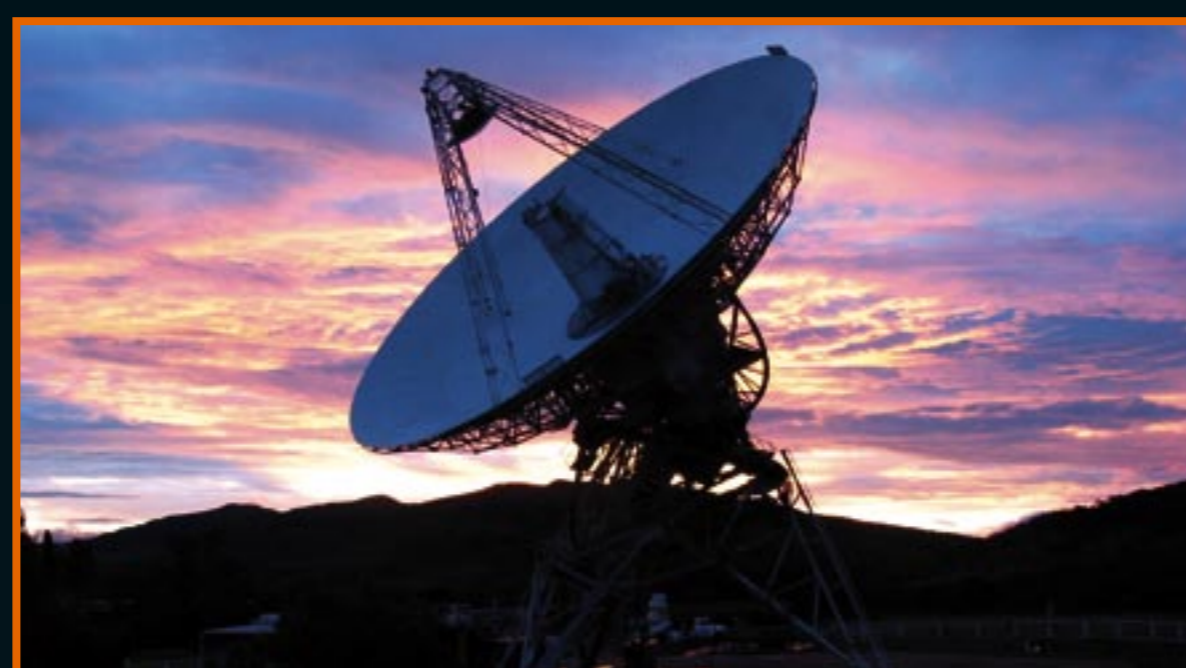
www.ska.ac.za



HARTEBEESTHOEK RADIO ASTRONOMY OBSERVATORY

HartRAO operate a telescope, 26m in diameter, which can detect radio waves ranging in wavelength from 2.5cm to 18cm. The radio waves are emitted by many different kinds of objects in the sky. HartRAO has the largest steerable radio telescope in Africa, and cooperates with radio telescope facilities on other continents.

Tel: (012) 326 0742
Fax: (012) 326 0756
www.hartrao.ac.za



BOYDEN OBSERVATORY

The Boyden, located just outside Bloemfontein, has the third largest optical telescope in Southern Africa, a 1.5m reflector and various other telescopes for educational purposes, including an excellent solar telescope. An observation platform is ideal for looking at satellites, astro-photography and open-air slide projector shows.

Tel: (051) 401 2924

THE HERMANUS MAGNETIC OBSERVATORY

The Hermanus Magnetic Observatory (HMO) is part of an international network of magnetic observatories, which monitor and model changes in the Earth's magnetic field. Researchers at the HMO are also involved in studying the magnetosphere, which is the outermost layer of the Earth's atmosphere. The HMO runs science awareness programmes for learners and offers presentations on space physics and guided tours of the HMO's facilities.

Tel: (028) 312 1196
Fax: (028) 312 2039
www.hmo.ac.za

HIGH ENERGY STEREO SCOPIC SYSTEM

The High Energy Stereoscopic System (H.E.S.S.) telescopes are located in the Khomas Highland in Namibia, on the Farm Goellschau. The H.E.S.S. is a next generation imaging system that will investigate gamma-ray sources. The H.E.S.S. project is a collaboration between the Czech Republic, France, Germany, Ireland, Namibia, South Africa and the United Kingdom. Gamma-rays are the most energetic form of light and are produced by the hottest regions of the universe. They are also produced by such violent events as supernova explosions or the destruction of atoms. The project will be used to study exotic phenomena like black holes, quasars, pulsars and particles left over from the creation of the universe.

hess.puk.ac.za

WHERE TO STUDY ASTRONOMY

UNIVERSITY OF CAPE TOWN

The department of Astronomy at the University of Cape Town offers astronomy at undergraduate level during the first and second year of study. These courses must be done in conjunction with Physics, which will be one of the major subjects of study. This means that Physics will be the studied from the first to the third year of study. Physics is the foundation for postgraduate study in astronomy and astrophysics, and often couples with Mathematics or Applied Mathematics.

Tel: (021) 650 2391
Fax: (021) 650 3342
Email: astro@physci.uct.ac.za

NATIONAL ASTROPHYSICS AND SPACE SCIENCE PROGRAMME

The National Astrophysics and Space Science Programme (NASSP) is a collaboration between researchers from around the country. NASSP is hosted by the UCT and students enrolling for the programme enjoy learning under some of the leading scientists in South Africa. NASSP offer Honours and Masters Programmes in Astrophysics and Space Science.

Tel: (021) 650 2391
Fax: (021) 650 3342
www.star.ac.za

RHODES UNIVERSITY

A wide range of exciting research is pursued in the Rhodes Physics department including radio astronomy, where work is in progress on a 2326 MHz radio continuum survey of the southern sky using data collected with the 26 metre dish at the Hartebeesthoek Radio Astronomy Observatory. Upper atmosphere physics and aeronomy, which focus on the ionosphere and magnetosphere surrounding the earth are also covered.

Tel: (046) 603-8450
Fax: (046) 622-5049
www.ru.ac.za/academic/faculties/science

NORTH-WEST UNIVERSITY

The Unit for Space Science studies events that occur in the Earth's upper atmosphere and magnetic field. Studies involve detecting and characterising gamma rays, and observing regions in space where stars originate. Other studies include observing the Earth's magnetosphere and heliosphere. Observations of this nature are conducted in the Antarctic.

School of Physics
Private Bag X6001,
Potchefstroom, 2520

UNIVERSITY OF KWAZULU-NATAL

The department of Physics at the University of Kwazulu-Natal (Pietermaritzburg) prides itself in setting the pace for astronomy in Kwazulu-Natal. By coupling practical field trips with a theoretical background ensures that students experience an energy of astronomy that extends beyond the lecture theatre. Natal University offers astronomy and cosmology lectures during the third and honours (fourth) years. Emphasis is placed on exposing students to the working environments, which they would find themselves upon completion of their degrees. This is achieved by having comprehensive vocational employment programmes.

roger.phy.unp.ac.za/
~astrophysics
or www.ukzn.ac.za

UNIVERSITY OF THE FREE STATE

The department of Physics offers an undergraduate course in astrophysics, which is coupled with courses in physics. The courses in astrophysics are linked to courses offered by Unisa. Students completing an undergraduate degree in science may specialise in astrophysics by pursuing a masters and later a Ph.D degree. The Physics Department boasts newly upgraded equipment and research facilities. The University of the Free State uses the newly refurbished Boyden telescope as part of its practical instructions to students.

www.uovs.ac.za

UNIVERSITY OF SOUTH AFRICA

The department of Mathematics, Applied Mathematics and Astronomy at the University of South Africa (Unisa) offers a comprehensive astronomy course, which progresses from undergraduate (first to third year) level to Masters and Phd level. The undergraduate course takes the student from an introduction to astronomy that includes Kepler Orbits in the first year to the evolution and structure of stars and galaxies in the second year. Third year topics include radiative mechanisms and radiative transfers. Emphasis is placed on practical work that is conducted at the Unisa Observatory, which is similar in design and equipment to large professional observatories.

Tel: (012) 429 6202
Fax: (012) 429 6064
www.unisa.ac.za

