

North-West University Centre for Space Research



Graduate Studies in Astrophysics and Space Physics *International Students*



Research Topics

- **Astrophysics**
Gamma-Ray, Optical, and Radio Astronomy; High-Energy Astrophysics; Star Formation; Galaxy Evolution
- **Space Physics**
Heliospheric Physics; Cosmic-Ray Transport; Turbulence and Particle Transport
- **Antarctic Research**
Cosmic-Ray Detectors
- **Physics in Application**
Particle Detectors; Low-noise Amplifiers; Intelligent Spark Plugs



Programs of Study

- **M. Sc.**
 - Astrophysics (I + II)*
 - Transport Theory*
 - Heliospheric Physics*
 - General Relativity*
 - Capita Selecta*
 - M.Sc. dissertation

* Students choose any three of these courses in consultation with the research director.
The dissertation is compulsory.

- **Ph.D.**
Ph.D. Dissertation in Astrophysics or Space Physics



Bursaries

- **M.Sc.:**
At least ZAR 75,000 p.a.
- **Ph.D.:**
At least ZAR 106,000 p.a.
Guaranteed minimum amounts, tax free.
May be augmented by travel and relocation allowances and merit-based top-ups. Cost of living is low in Potchefstroom: Students can easily live on ~ ZAR 6,000 per month.



Topics in Astrophysics



- **Gamma-Ray Astronomy:**
Gamma-Ray Observations with the High-Energy Stereoscopic System (H.E.S.S.) in Namibia, the world's leading gamma-ray observatory.
- **High-Energy Astrophysics:**
Pulsars; supernova remnants; microquasars; active galactic nuclei; gamma-ray bursts
- **Star Formation and Radio Astronomy:**
Radio Observations of star-forming regions; theory of masers
- **Galaxy Evolution:**
Optical Observations of galaxies and stellar populations

Topics in Space Physics

- **Heliospheric Physics:**
Solar physics; cosmic-ray transport in the solar system
- **Cosmic-Ray Physics:**
Cosmic-ray transport in interstellar and interplanetary space; diffuse emission from cosmic-ray interactions
- **Turbulence:**
Simulations of interplanetary turbulence and particle transport

Antarctic Research

- Cosmic-ray measurements (neutron monitors)



Physics in Application

- Technology developments: Mini neutron monitors; low-noise amplifiers; intelligent spark plugs

Research Facilities

- High Energy Stereoscopic System (H.E.S.S.)
- Hartebeesthoek Radio Astronomy Observatory
- KAT-7 / MeerKat / SKA (Square Kilometre Array) Radio Observatories
- SALT and other SAAO telescopes
- South African National Antarctic Expedition (SANAE) Research Station
- Centre for High Performance Computing (CHPC)
- Space Exploration Missions (Voyager, Ulysses, PAMELA, and others)

How to Apply

Send:

- Application letter.
- Transcripts from former institutions.
- Statement of Research Experience (if applicable)
- Research Interests
- For applicants from countries in which the language of instruction is not English: Proof of English proficiency (TOEFL or equivalent)

To: Mrs. Elanie van Rooyen
Centre for Space Research
Private Bag X6001
Potchefstroom, 2520
South Africa

E-mail: Elanie.vanRooyen@nwu.ac.za

And Arrange for 3 letters of recommendation from Professors / Instructors/ Research Supervisors to be sent to the same address.

Application Deadline:

October 1 (for admission in January)

Inquiries:

General Inquiries:

Prof. S. Ferreira (Stefan.Ferreira@nwu.ac.za)
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Astrophysics:

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