

## THE SOUTH AFRICAN ASTRONOMICAL OBSERVATORY

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### Abstract

Instrumentation and programs of the South African Astronomical Observatory (SAAO) are described.

### 1. Introduction

The South African Astronomical Observatory (SAAO) has main offices, library, and computational facilities in Cape Town, but maintains its principal telescopes at the Sutherland site, about 400 kilometers north-east of Cape Town, in the Great Karroo semi-desert. Sutherland is on the border of the Summer and Winter rainfall regions so that there is a fairly even distribution of "good" conditions throughout the year. Typically, about 50% of nights are "photometric", with a further 15-20% "spectroscopic" or suitable for less demanding observations. The principal users of the site are SAAO staff and South African Universities, mainly the University of Cape Town (UCT) and the University of South Africa (UNISA). A significant portion of time is allocated to guest observers from other countries. The distribution of observatories in the Southern hemisphere makes the SAAO Sutherland site an important link in any attempt to carry out multi-longitude or "continuous" observing programs.

### 2. Instruments

The telescopes and principal auxiliary instruments of the SAAO are listed in Table 1.

Table 1. Instruments of the SAAO

<i>Telescope</i>	<i>Instrumentation</i>
1) 1.9-m	Grating spectrograph + Reticon detector Infra-red photometer (JHKLM) Bolometer (MNQ) CCD Camera (under construction) IR Array (under construction)
2) 1.0-m	CCD Camera (RCA 512x320) Photoelectric photometer (UBVRI, uvby, etc.) UCT photometer/polarimeter (UBVRI & high speed)

Table 1 (continued)

<i>Telescope</i>	<i>Instrumentation</i>
3) 0.75-m	Infra-red photometer (JHKLM) UCT photometer/polarimeter (UBVRI + "high speed")
4) 0.5-m	Photoelectric photometer (UBVRI, etc., + "high speed")
5) University of Birmingham (UK) Automatic Solar Telescope	

Currently under construction are a 0.75-m Automatic Photoelectric Telescope (APT) based on the Autoscope design, a CCD for the 1.9-m telescope, and an infrared CCD also for the 1.9-m. Feasibility studies are under way to consider the possibility of building a 3.5-m telescope at Sutherland.

### 3. Programs

Extensive programs of variable star observations are under way at SAAO covering objects of classes such as:  $\delta$  Cephei,  $\beta$  Cephei,  $\delta$  Scuti, Ap stars, W Virginis, Mira, RV Tauri, R Coronae Borealis, symbiotic and white dwarf stars, cataclysmic variables, OH/IR sources, novae, SN 1987a, X-ray binaries, long period variables and hydrogen-deficient stars. Variable Seyfert galaxies are also being observed. Current or recent collaborations of SAAO, UCT, and UNISA staff members have included a number of multi-site programs ("Whole Earth Telescope" observations) and have provided simultaneous or follow-up data for the IUE, IRAS, and HEAO-1 satellites. Planned projects include ground-based observations to support data obtained by the ASTRO-1 (Space Shuttle) package, the HIPPARCOS Astrometric Satellite, and the Hubble Space Telescope.