Is SALT doing its best and can it do better?

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SALT fails to provide noticeable amount of publishable data.

Refereed scientific papers; ()=without SA as co-authors

2006 2 (0)
2007 4 (1)
2008 6 (1)
2009 4 (1)
2010 10 (3) HET – 32 papers
2011 3 (1) One of them does not use any SALT data
2012 9 (3)
2013 3 (1)

Some papers contain just a small contribution from SALT.

Foundation's sin – site testing totally neglected

- **Statistics based on pre-2000 reports from SAAO telescopes too optimistic.**
- **Site has a mediocre seeing. Too bad even for SALT.**
- **Frequent hight humidity is the major issue. Reduces obs-time, causes damage to edge sensors, affects instruments.**
- **Dusty place. No attempt made to protect at least the immediate vicinity of the telescope.**

Southerand is not a place for large telescopes! SKA/MeerKAt location would be probably better.

Cape Town
Sutherland
CAPE TOWN
C A P E
A T L A N T I C   O C E A N
Calvinia
Carnarvon
Victoria West
Beaufort West
Clanwilliam
Worcester
Paarl
Stellenbosch
Wellington
Ceres
Touwsrivier
Laingsburg
Matjiesfontein
Montagu
Robertson
Caledon
Hermanus
Swellendam
Bredasdorp
Heidelberg
Riversdale
George
Mossel B.
Oudtshoorn
Ladismith
Prince Albert
Malmesbury
Moorreesburg
Piketberg
Saldanha B.
St. Helena Bay
Simonstown
False Bay
C. of Good Hope
C. Agulhas
Table B.
Somerset West
Strand
Wynberg
Bellville
Tulbagh
Vanrhynsdorp
Nieuwoudtville
Williston
Fraserburg
Nuweveldberge
Roggeveldberge
Koedoesberge
Langeberge
Swartberge
Little Karoo
East from G

Unforunate decision made during October 2001 Meeting in Madison

- Almost all money from instruments fund assigned to single instrument – medium resolution imaging spectrograph PFIS. Funds provided as in- kind contribution by UW and RU. Accepted instrument too complicated (19 modes), too heavy and including seldom used F-P mode. No money left for the high resolution spectrograph. Very risky and unfortunate decision! (These are not post-factum remarks).
- Despite late delivery and high cost (~$7M instead of the originally accepted ~$4M) the instrument proved to be unreliable and inefficient. It is hardly competitive and definitely not worth money spent on its construction.

PFIS Operational Concept Definition Document 3/11/03

19 operational modes listed; 7 to be commissioned

- Stromgren & narrow band imaging over 8' field
- Long slit spectroscopy
- Multi-slit spectroscopy
- High time resolution long slit spectroscopy
- Fabry-Perot imaging
- Long slit linear spectropolarimetry
- Multi-slit linear spectropolarimetry

- Can we expect that the RSS will be commissioned and justly valued after the fix planned for 2013? This may lead to re-determination of shares owned by UW and RU. How many of 19 (7) modes are fully functional? Are they up to spec? How will SALT account for the time lost due to repeated down-times of RSS and its low efficiency?
- Where are the data from already comissioning test observations?
- Can one use RSS for radial velocity studies? What is known about the stability of zero point for long-slit mode? What sort of rms should one expect for repeated observations of bright stars, 5 or 50 km/s? Tests with arcs do not tell the story.
- What sort of systematic errors should one expect in multi-slit mode? How the measured radial velocities depend on XY and positioning of slits? What is expected rms for repeated observations of constant stars?
- What about fringing in near IR? What did SA astronomers did to solve this issue?

SALT would be much better off if the HRS was operational for the last few years. In particular HRS should be able to produce useful data during extended period of IQ problems and down-times of RSS.

Disaster in the infrared!

PFIS-PDR-report-2.doc – document from Oct 2001

"We encourage the PFIS team to do as much to reduce the weight of PFIS as far as practical and be prepared to abandon thoughts of a double-beam instrument. We advise that any NIR spectroscopic capability be analyzed in enough detail that the SALT community is aware of its thermal/wavelength limitations and, if supported, is designed as a swap-in instrument."

HET decommissioned its IR spectrograph quickly.

May 2006 – First show by the magician Andy Sheinis.

Neither the telescope nor the site are suitable for IR observations (high humidity, low altitude, too much glass in the beam)

The IR arm forced construction of a new tracker at cost of $2M. The instrument is delayed and the budget expanded from $6.2M (with 11% contingency) to $8.7M in 2013. The longer instrument is being build the more expensive it becomes. Is SALT is going to pay ~$10M for the J-band IR spectrograph? This would be about a half of the telescope cost. Is this instrument likely to boost the scientific output of SALT and be competitive? Is UW going to take over SALT just because there is no limit for the budget of the IR arm?

Will the delivery of the IR-arm cause some partners to withdraw from SALT?

Why SALT Failed ?

- The telescope located in mediocre place.
- The main instrument not up to spec; has several problems.
- SAMS not fully functional, affected by humidity.
- Lack of HRS.
- Two years of time spent on solving IQ problem.
- Too many risky decisions concerning instruments.
- Queue scheduling software far from optimal.
- HET type design turns out to be not so exciting.

Can we save SALT ?

- Fast commissioning of HRS should be the top priority. Precisely define capabilities of the instrument including the iodine cell.
- There is a contradiction between the need for many all-sky targets and the interest in concluding projects. Possibly 2-3 semester long programs are a good solution. Another option is to have more multi-partner programs capable of obtaining a lot of time in one semester. This may be very important for HRS. It is likely that many groups will attempt RV surveys of extra-solar planets.

Can we save SALT?

- The board should rely on common sense; be realistic about telescope location and capabilities.
- Set deadlines and define a detailed schedule for all instrumental and engineering projects. This is a ground based, not a space facility!
- Look in advance for acceptable solutions in case the IR arm turns to be out of spec. Think about distribution of new shares and dangerous depreciation of obs-time for many of partners!