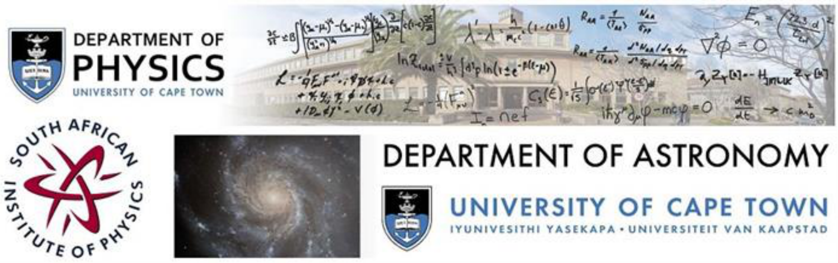

Contribution ID: **18** Type: **Oral Presentation**

Automated Scheduling for a robotic astronomical telescope

Thursday, 7 July 2016 11:50 (20 minutes)

Abstract content
   (Max 300 words)
Formatting &
Special chars

The Alan Cousins Automatic Photometric Telescope (APT) is a 0.75-m automatic photoelectric telescope commissioned in mid-2000. The sole science driver for the APT is photometry, used mainly for the long-term monitoring of variable stars. In addition, there is the potential for target-of-opportunity observations such as gamma ray bursts and solar eclipse observations.

Ultimately the APT is expected to be fully robotic. Some advance toward this goal has been made. The next phase is the implementation of an automated scheduler that will generate a pool of valid observations for each night of observation. The aim of this project is to implement such an automated scheduling strategy for the APT.

Scheduling related to science instruments is typically complex, since often the problem contains many interacting complex constraints and requires making preliminary scheduling choices that impact other choices later. Furthermore, sets of constraints are dependent on the particular scientific project being conducted, while new types of constraints may be added as the fundamental problem changes.

Given these complex, often inseparably connected constraints, astronomy scheduling requires long-term planning as well as short-term optimisation. While one aspect of scheduling is to focus on optimising resource utilization, another aspect is the ability to recover from periods of bad observational conditions and other disruptions in the observing schedule.

This leads us to consider a three-stage approach: Planning, scheduling, and observing. Planning and scheduling are distinctly different activities. Planning not only concerns setting up an observation plan for a telescope and/or instrument, but also relates to planning by the observatory on scheduling the observations to achieve some objective. Scheduling requires planning information to assess temporal assignment of observations to best achieve an execution plan. Observing has to deal with the dynamic conditions during execution of an observation through best-choice selection among possible options, based on available observation plans.

Apply to be
 considered for a student
   award (Yes / No)?

Yes

Level for award
 (Hons, MSc,
   PhD, N/A)?

MSc

Main supervisor (name and email)
and his / her institution

Prof Peter Martinez, peter.martinez@uct.ac.za
UCT

Would you like to
 submit a short paper
 for the Conference
 Proceedings (Yes / No)?

Yes

Please indicate whether
this abstract may be
published online
(Yes / No)

Yes

Primary author: Mr MAARTENS, Deneys (SALT)

Co-authors: Prof. MARTINEZ, Peter (UCT); Ms VAN ROOYEN, Ruby (SKA)

Presenter: Mr MAARTENS, Deneys (SALT)

Session Classification: Space Science

Track Classification: Track D2 - Space Science