SPRAT - Introduction

Liverpool Telescope located on La Palma in the Canary Islands

http://telescope.livjm.ac.uk/About/

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SPectrograph for the Rapid Acquisition of Transients

Aim to Reach Mag. = 20 (seeing <1.0 arcsec)

Low Resolution, R=350

Optical, λ = 4000-8000 Å

Linear and compact = only 65 cm long

Selectable peak sensitivity. Red or blue

Automated Target Acquisition & Positioning
Instrument Plan View

- Slit
- Field Lens
- Long-pass Filter
- Collimator Lens
- Grism=Grating+Prisms
- Grism Angle Actuator
- Cal. Mirror
- Camera Lens
- CCD (1024x255)
- Actuators

5 cm
SPRAT Spectrograph

Imaging Mode FOV = 7.5 x 1.9 arcmin

Slit manually adjustable. Width (4 pixels) = 1.8 arcsec

Dispersion = 4.6 Å / pixel

Accurate placement of target on slit - “Magic Pixel”

2 acquisition methods. Brightest or WCS

Either longslit or slitless spectroscopy

First light 03-Sept-2014
Acquisition of BD+28

Initial frame.
Object off magic pixel

Automatic acquisition of brightest object.
Object on magic pixel

Slit deployed.
Object centred on slit
Autoguider tracking
Standard Star - BD+28

Comparison of Blue and Red Grating Modes (BD+28 4211)

counts
25000
20000
15000
10000
5000
0
4000 4500 5000 5500 6000 6500 7000 7500 8000
Wavelength (Angstrom)
SN Spectra 14gh – type Ia

Red and blue modes
100s exposure (Mag 16)

Blue mode
300s exposure (Mag 16)
Longslit vs Slitless

SN 14GN slit (orange) vs slitless (green)
Data Pipeline

Re-use of existing Frodospec Data Pipeline created by Rob Barnsley at LJMU

URL:
http://gaia-followup.dyndns.org:5001/dashboard