



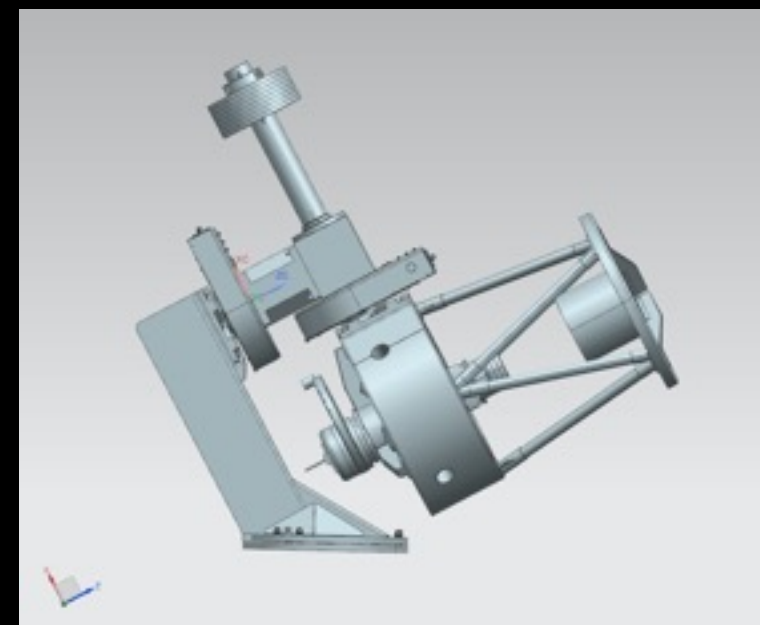
MeerLICHT

- ★ What is MeerLICHT?
- ★ MeerLICHT observing strategy
- ★ Data, storage and dissemination
- ★ Project timeline
- ★ Points for discussion



An optical eye on the radio sky

- 60cm fully robotic optical telescope
- Field of view 1.6×1.6 degrees
- Prototype for BlackGEM array
- Located in Sutherland, South Africa
- On sky by October 2016
- Slaved to MeerKAT





MeerLICHT observing strategy

MeerLICHT to observe wherever MeerKAT observes,
simultaneously

Filter sequence: **y u y r y i y z** (on repeat)

Exposure time = 60s per filter

Readout = 10s

Other modes:

ThunderKAT snapshot: **y y y y y** ...

ThunderKAT ToO: **y u y r y i y z** ...

Standalone: filters depend on science

As you were: when MeerKAT does a short calibrator source

Static (co-added short exposures) data provided to MeerKAT
large surveys



Accessing MeerKAT's schedule

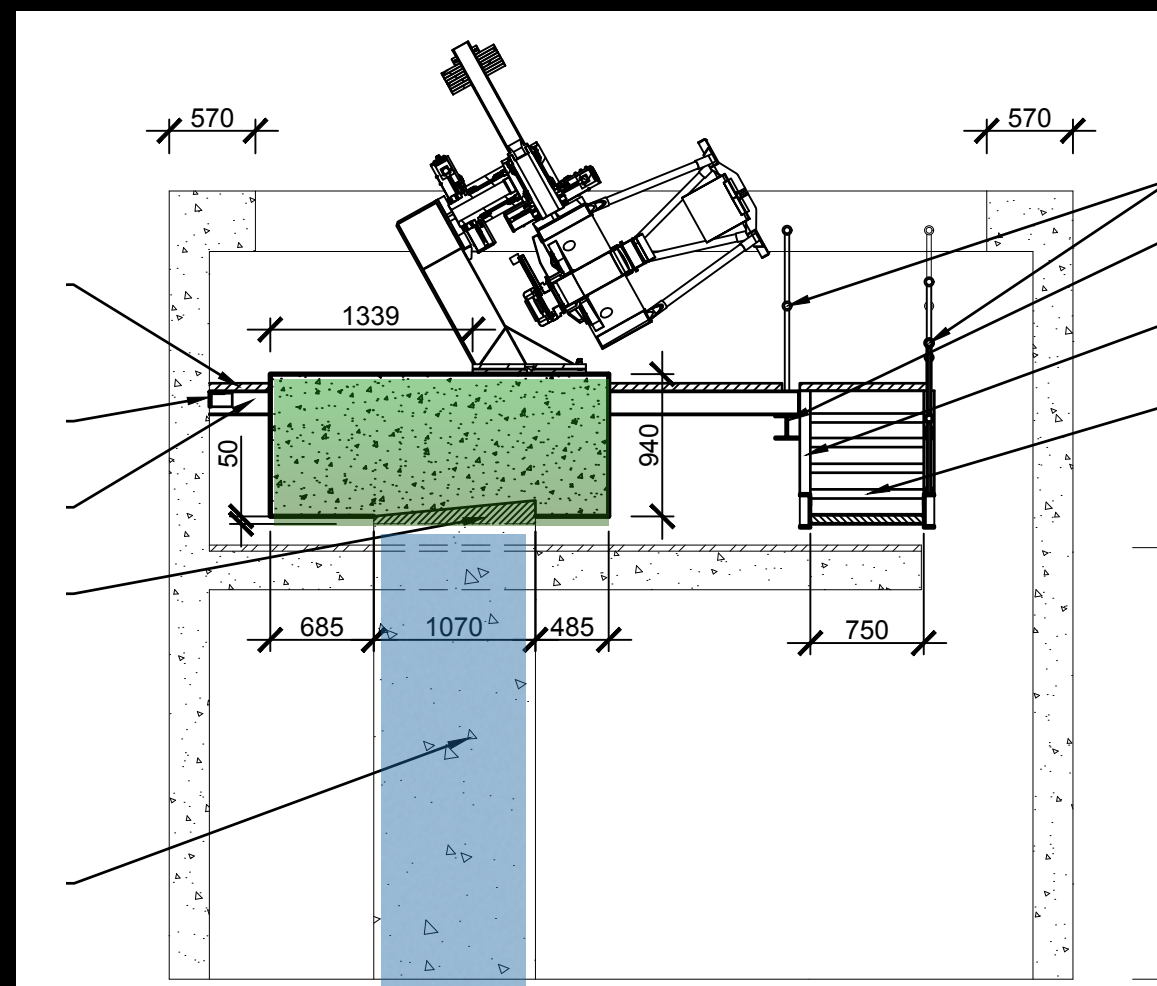


Real-time	Short term plan	Long term plan
Current pointing, target, survey	For the next 20 min Pointing plan, metadata, target, survey, etc	Same data, but over 0.5 - 1 night, updated as conditions change.
Ready now	End 2016	2017



Dome renovations

- Waterproofing ✓
- Dome automation ✓
- Pier design ✓
- Pier construction ✗
- Finishing ✗





Data pipeline

- Built on Skymapper transient detection software
- Runs in real time and again during day
- Processing will run in Cape Town & Nijmegen
- Machine learning discrimination: sources vs artefacts

Data rate from MeerLICHT
3 MB/s

Near real time processing
50 - 100 CPUs
2 - 4 GB/CPU

Total storage:
550 TB over 5 years





Databases

- Transient database (~10 000 records per night)
- Total source database (10 TB/year)

Total source database
solution required!
Computer science + Astronomy
collaboration

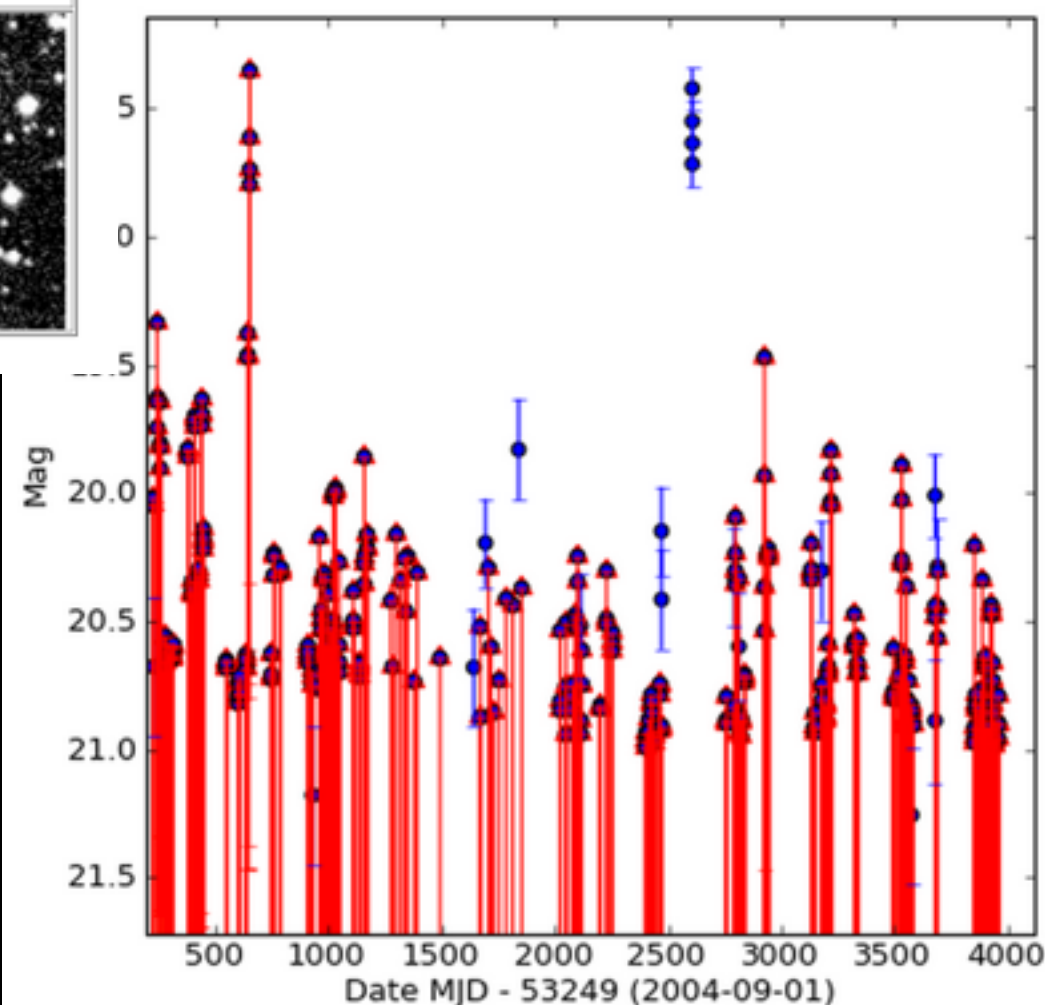
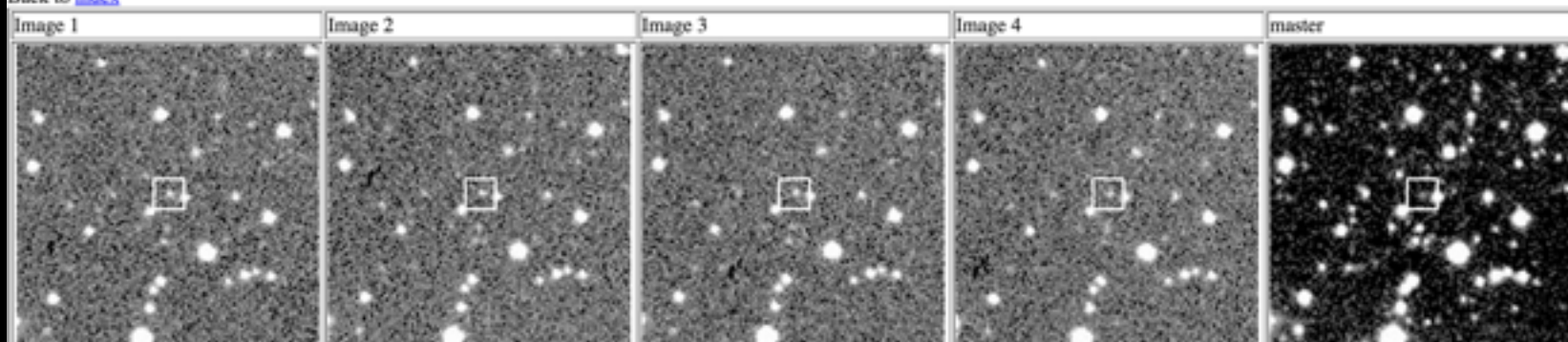


Interfacing and alerts

- Web interface for every transient
- Alerts (VOEvents) for optical transients
- Interfacing MeerKAT + MeerLICHT transients

CRTS Transient ID **CSS111023:170618+383220**
(When using CRTS data please cite Drake et al. 2009, *ApJ*, 696, 870 and our ID.)

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MeerLICHT Timeline

Phase	Date
Final design review - BlackGEM	Dec 2015
Dome (Sutherland) ready	March 2016
Assembly, Integration, Testing	June 2016
MeerLICHT first light	Oct 2016



Points for discussion

1. Science projects (transient & standalone)
2. Commissioning plan
3. Database development
4. Software development (reduction & classification)
5. MeerLICHT scheduler
6. Transient Zoo and outreach