SETI@CAMRAS

C.A. Muller Radio Astronomie Station

The first steps

It all began in 1956

And in one giant leap we go to 2014…

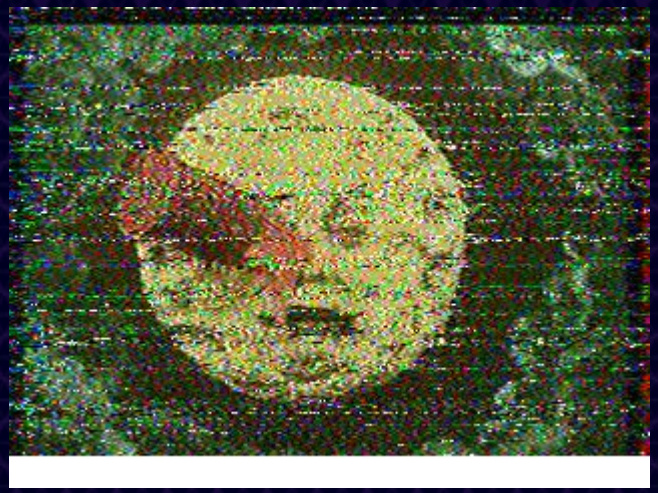
From ‘your Majesty’ to ‘your Nobelity’ ☺

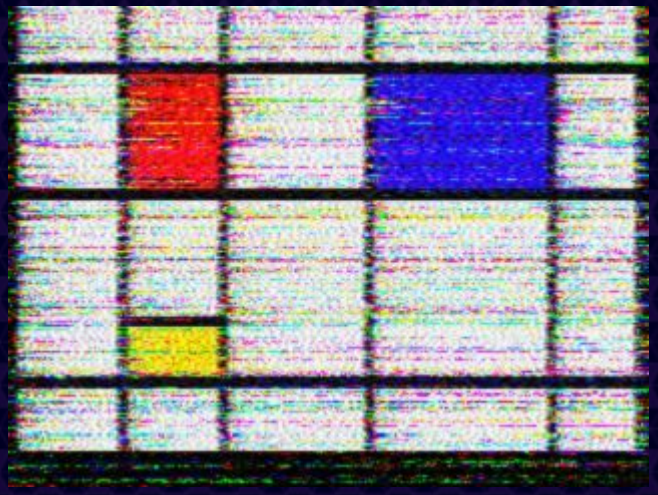
The ‘brand new’ Dwingeloo dish is now ready for some decades of great science again!

It’s ‘second life’ started in 2008.
Since then much has been done.

- It has become an icon in the amateur radio moonbounce world and it has become world famous because of that.
- It has done many amateur radio astronomy measurements.
- It has supported many projects of students all over the country.
- It saved a professional satellite that had gone ‘out of control’.

- It took part in many artistic projects and became world famous in the art world too.





- It even was instrumental in the first moonbounce wedding ☺

- One thing the telescope did not do (yet)…….
- SETI

The biggest question always asked by our visitors:

‘Do your search for life in the universe with this instrument?’

On November 12 in 2014 a ‘kick off’ meeting was organised at ASTRON

Mike Garrett, Andrew Siemion and Emillo Enriquez were present and the first ideas were exchanged

And in 2015 SETI@CAMRAS was started.

- Mike Garrett always has been a great supporter of doing SETI with the dish.
- André van Es even made SETI his philosophy thesis.
- A group a people came together to make it happen.

Harry Keizer	coordination
Marc Wolf	coordination
Paul Boven	
André van Es	
Ard Hartsuijker	
Thomas Jaspers	
Matthieu Jeantot	
Lisanne de Jonge	
Drikus Kleefsman	
Hans van der Meer	
Stelio Montebugnoli	
Jan van Muijlwijk	
Daniela de Paulis	
Peeyush Prasad	

Mike Garrett scientific supervisor

The group exchanged some first thoughts and got into contact with several people with a lot of SETI experience:

Andrew Siemion
Stelio Montebugnoli
Graziano Chiaro
Emillio Enriquez
Seth Shostak

This is our status right now.

Next overview is made by Peeyus

CAMRAS Capabilities for SETI

- Sensitive, 25m fully steerable Dwingeloo Telescope (TODO K/Jy sensitivity)
- L-band frontend (TODO: Specs)
- Flexible digital backend
  - Sampled bandwidth: 35 MHz @ 10bit quantization
  - Raw, line and low resolution spectra mode
- Commodity ICT infrastructure with professional (volunteer) management.
  - TODO: Disk + compute availability summary.
- Ample time commitment for SETI searches.
- Access to professional human resources, including radio engineers, radio astronomers, ICT and Ham radio enthusiasts.

Seti@home

- Mature infrastructure for distributed processing of SETI observations.
- Originally intended for Arecibo data (transit mode observations), but adapted to Green Bank Telescope as well.
- Types of searches:
  - Narrow band (Hz) beacons (continuous and pulsed, 0.075-1220 Hz resolutions)
  - Narrow band chirped signals (continuous and pulsed, ±100Hz/sec Doppler search)
  - Single pulse searches

seti@home traditional signal flow

seti@home CAMRAS signal flow

Dwingeloo

2.5MHz @1421 MHz

Inter-mediate storage

Splitter

Metadata Injection

2.5MHz = 256*10kHz (Workunits)

Multicore system

Results Database

Seti client

Seti client

Seti client

*Red text = Modifications for CAMRAS

CAMRAS SETI observing strategy

- Transit mode:
  - Remote observation.
  - Declination strip with interesting targets to be determined.
  - Quasi realtime, SETI search parameters scaled to available computing resources.

- Tracking mode:
  - Manual observation.
  - High spectral and time resolution SETI search.
  - Performed offline due to computing infrastructure restrictions.

CAMRAS Seti effort: Current status

- Front end: TODO
- Raw mode:
  - available with GPS timestamp, precision of 5microsecs.
- Seti client interface to raw data simulator:
  - Generates workunit files that can be processed by seti@home.
- Tool for generation of xml elements for workunit header:
  - Include metadata from an observation.
- Interface between CAMRAS raw mode and splitter block ongoing.

One ‘hot item’ to address…..

To METI or not to METI…

We already did it in 2010 ☺

We invited the Klingon!!

See the movie…

SETI@CAMRAS is still in a very early stage and we are open to suggestions…

Questions ?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DWINGELOO TELESCOOP


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