

# Double Maser Super Burst telecom, No. 1

## Minutes

13 Dec 2017  
minutes: Ross Burns

### 1 Notes

For the first meeting, in which we mostly were establishing the different threads of our project - and to catch-up with each other's progress, I will simply embellish the agenda with the main comments from the meeting. Content added to the agenda (black) will be in red.

### 2 Purpose of this meeting

Since the impromptu lunch meetings in Cagliari that formed the basis of our efforts in this maser super burst project, the communication within our group has endured differences in geographical locations, timezones and busy schedules. The purpose of this meeting is to digitally reassemble and share the latest news and progress of our efforts - to get everyone up to date with the many various branches of our group studying the super bursts in G25 and W49N, and future bursts.

Since this is the first meeting it may be helpful to begin with establishing the extent of our project and its members.

We established that our group, the M2O-VLBI, exists as a branch of the Maser Monitoring Organisation (M2O). Our objective is to investigate the maser super burst process, and its significance to (massive) star formation, using VLBI observations. We aim to perform maser mapping observations of burst candidates while in their inactive phase, in addition to Target of Opportunity (ToO) VLBI observations during bursts. Triggered proposals, submitted in the usual call, can also be submitted for known burst targets.

### 3 Recognising all branches of the project

Our project is made up of several branches, each with different instruments and motivations. We have data coming from the following branches (please raise anything missing). We will discuss each in detail later.

#### Single dish monitoring

HART // Simeiz RT-22 // Torun // Moscow RT-22 // Effelsberg // Hitachi 32m

In general, single-dish monitoring will be handled by the M2O - while we are concerned with the VLBI follow-up observations

#### Compact array

VLA // SMA - need to hear from Todd and Crystal

#### VLBI

EVN // KaVA // VLBA // QUASAR // RadioAstron // VERA

#### Other branches

APEX (one-time [not monitoring] single dish)

## 4 Establishing members of the project

It seems natural to consider everyone cc'd in our "G25.65+1.05 and W49N burst VLBI ToO" mailing list discussion as members.

- A mailing list was established. The team as a whole can be contacted via the mailing list: [M2O-VLBI@jive.eu](mailto:M2O-VLBI@jive.eu)  
The following page contains mail archives and membership options for the mailing list: <http://mailman.astron.nl/listinfo/m2o-vlbi>

Below is a list of current members (at the time of the first meeting), a maintained list is kept on the wiki page (see further below)

Ross Burns - JIVE, Netherlands	Gabor Orosz - Urumqim China
Huib van Langevelde - JIVE, Netherlands	Kee-Tae Kim - KASI, Korea
Katherina Immer - JIVE, Netherlands	Alexandr Volvach - RALCAO and U. Kiev, Ukraine
Willem Baan - ASTRON, Netherlands	Busaba Kramer - MPIFR, Germany
Olga Bayandina - ASC, Russia	Alex Kraus - MPIFR, Germany
Irina Val'tts ASC, Russia	Karl Menten - MPIFR, Germany
Nadya Shakhvorostova ASC, Russia	Jungha Kim - NAOJ, Japan
Mateusz Olech - Torun, Poland	Koichiro Sugiyama - NOAJ, Japan
Pawel Wolak - Torun, Poland	Kazuhito Motogi - Yamaguchi U., Japan
Anna Bartkiewicz - Torun, Poland	Tomoya Hirota NAOJ and SOKENDAI, Japan
Stan Krutz - UNAM, Mexico	Crystal Brogan - NRAO, US
Gabriele Surcis - OAC, Italy	Todd Hunter - NRAO, US
Georgij Rudnitskij - Moscow state U., Russia	
Gordon MacLeod - HARTRAO, S.Africa	

## 5 Progress report

Reports from the various branches of the project

### Single dish monitoring

- Hart (Gordon)
- RT22 Simeiz (Alexandr)
- Torun (Mateusz/Pawel)
- RT22 Moscow (Georgij Rudnitskij)

---

### Compact array

- VLA (Stan/Olga)
- SMA?
- Other?

---

### VLBI

- EVN (Ross)
- KaVA (Ross/Tomoya)
- VLBA (Gabor)
- Other?

---

### Other branches?

- ???
- 

Reports were collected and are hosted on the wiki page (see further below)

## 6 Maintaining a timeline of our observations

Since we are studying highly a time-variable phenomenon it will be helpful to catalog each of our observations in some kind of timeline.

- Any suggestions on the best way to do/maintain this?

Alexandr Volvach has been doing this for some time and we could ask him to collate all data, from various M2O sources, on our VLBI targets of interest. It would be good if the timelines were accessible/hosted somewhere.

## 7 Sharing data

Team members of our project have already collected new data on Super Bursts, in addition to historic monitoring data, and future data.

- How should we share current/new data?

Currently, links to the VLBI data are housed on the wiki page (see further below)

## 8 Data Reduction

We can discuss any issues regarding the reduction of data.

- Software for Single-dish
- AIPS
- CASA

Data reduction is typically being handled by those who proposed and arranged the observations. Early progress is promising but there is a lot left to do and collaboration among members will be helpful. More details are in the individual reports on the wiki page

## 9 Future proposals

- 6.7 GHz maser observations ( Single dish / comp. arr. / VLBI )
- Cooperation with the M<sup>2</sup>O, any new sources? (NGC6334)
- Triggered ToO proposals
- Overleaf for proposal preparation

There was a strong apatite for conducting baseline VLBI observations of burst candidates so that we can compare pre-, during- and post-burst maps.

-

Consider joining efforts with VLBI project of Yonekura.

-

New burst candidates: G09.62, periodic 6.7 GHz, flares at 22 GHz.

Known candidates: G25, W49N, NGC6334, Orion KL

-

Continue using OverLeaf [will merge with ShareLaTeX]

## 10 Human Resources

Establishing how the workload will be spread.

- Organisation/coordination
- Data handling: current data
- Proposals

- Data handling: new data
- Reporting results
- Student projects

There are low chances of getting students for the project with the exception of possibly a student named Fondiheven(?spelling?) at HART. In any case, the current workload is manageable with the current team. Ross (me) can deal with much of the proposing, coordinating and reporting - while individual members pursue individual sources and observations with VLBI and interferometers.

## 11 Publication plan considerations

Super Burst ToO data are urgent - to the community and due to short data proprietary period. (The following strategy is suggested based on email discussion)

First// Publish observational papers from individual branches.

Then// Publish papers per source discussing star formation combining branches.

Finally// Combine sources and branches to try to understand the super burst mechanism itself.

No objections to the above, but we should first wait to see what the VLBI data yield.

-

Easy first papers could be: Maser light curve + basic VLBI spot map.

In that case, G25 already has both requirements...

## 12 Future telecoms

- Based on this telecom, should we have more?
- If so, ( Quaterly / every 2 months / every month / every 2 weeks ) ?
- The format of telecoms? ( Separate telecom for each branch / Keep one full telecom )

Telecoms: monthly or every 2 months, would be sufficient.

-

We (M2O-VLBI) will keep a separate telecom to the single-dish group (M2O), but cross-participation is certainly encouraged

-

Continue using Skype, unless a better alternative comes

## 13 Wiki

- Would it be helpful to set up a Wiki to host member lists, meeting minutes, observation times, proposal documents, results etc. ?

Wiki page was set up at:

<http://www.jive.nl/jivewiki/doku.php?id=masers>

## 14 Any other points / plans / announcements?

James O Chibueze joined, he will have more time to contribute starting Jan-March 2018

-

It would be worth contacting Simon Ellingsen about inclusion of the LBA for Southern sources at 6.7 and 22 GHz

-

Important to clarify the details of the relationship between the M2O and M2O-VLBI with regards to communicating alerts of new flares, some kind of burst criteria and basic communication protocol would be helpful.