ETHZ

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CALLISTO status report #26

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Remark: replace Ω with @ in the email addresses above.

Current distribution of spectrometer in the e-Callisto network:
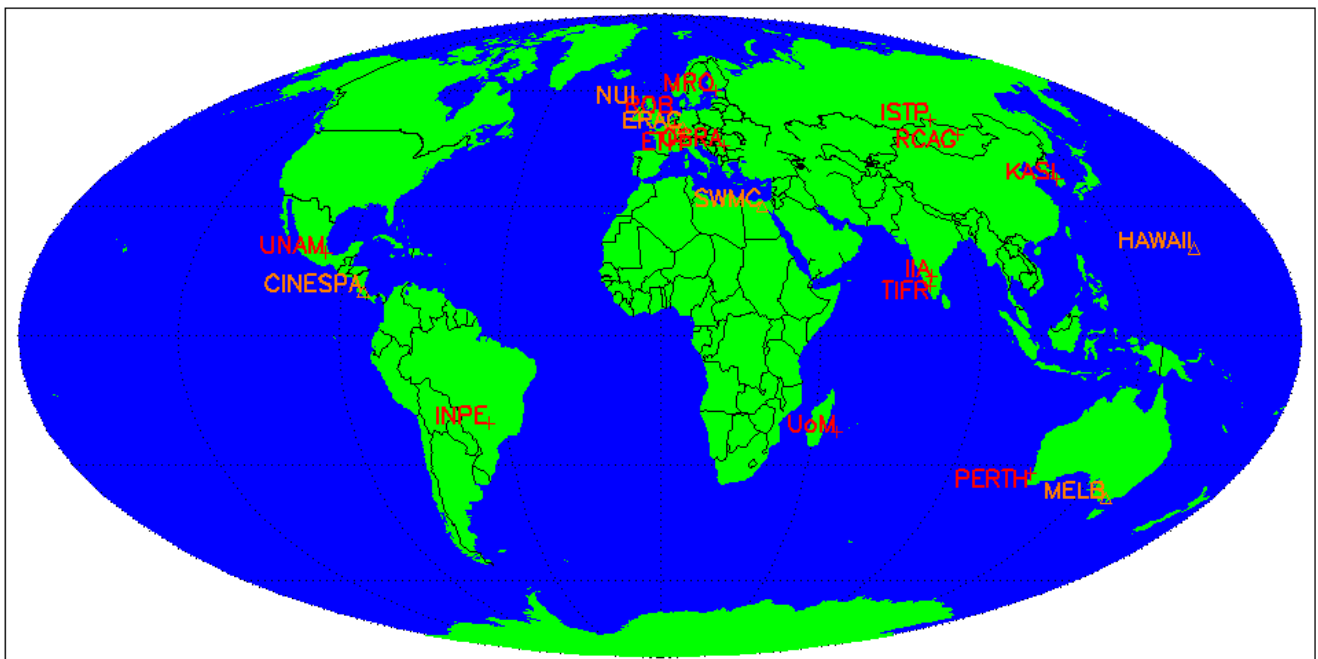

Current spectrometer situation:
Working: 13 stations with totally 21 instruments (red)
Installed: 6 stations with totally 6 instruments delivering no data to the network (purple)
Coverage in Pacific region is still to be improved (Canada, Hawaii, New Zealand, etc.)

Three new locations welcome on board of the e-Callisto network

1st light of Callisto in Metsähovi observatory, Technical University of Helsinki, Finland
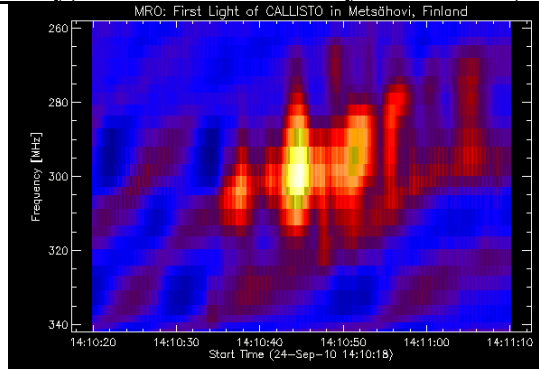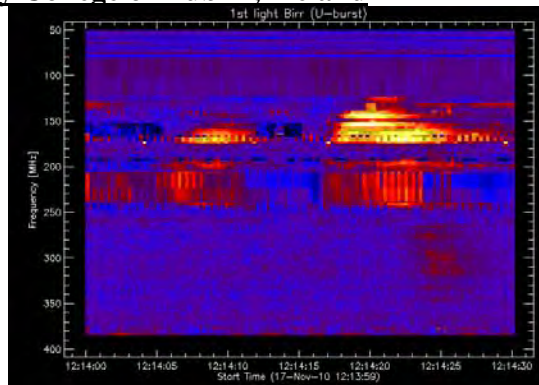
  Noise storm

Logarithmic-periodic antenna attached to the rim of a 37 GHz dish.

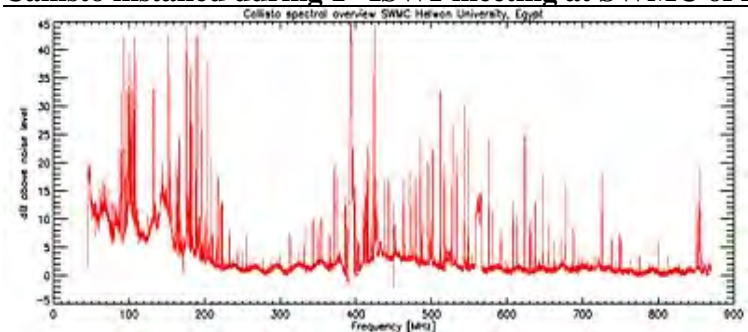### 1st light of Callisto in Birr castle, Trinity College of Dublin, Ireland

 Birr castle 2 x U-burst

Logarithmic-periodic antenna mounted on an EGIS rotator at Birr castle, Ireland

Callisto installed during 1st ISWI-meeting at SWMC of Helwan University, Cairo Egypt

SWMC group photo.

SWMC is currently planning an antenna and a frontend for Callisto.

New requests for a Callisto during 1st ISWI-meeting in Cairo:

- Almaty Kazakhstan, Glasgow Scotland, Ahmadabad India,
- Malaysia, Nigeria, Slovakia, Turkey, Morocco, Ethiopia,
- Canada, Cuba, Peru, France, Spain, Italy, Germany
- Etc.

Not all requests can be satisfied. Priority has the scientific aspect to have all longitudes on board to cover 24h of observation. And, a minimum of funding is needed to procure an antenna, a PC, some cables etc.

Callisto blog here:
http://www.e-callisto.blogspot.com/

Access to burst list here:
http://www.exp-astro.phys.ethz.ch/astro1/Users/cmonstei/instrument/callisto/Appdocs/FlaresCallistoNetwork2010.htm

Access to Callisto data here:
http://soleil.i4ds.ch/solarradio/data/2002-20yy_Callisto/

Article about Callisto at ETH Zürich (German language)
http://www.ethlife.ethz.ch/archive_articles/100809_Messgeraete_cho

Article in CRAF newsletter No. 21 2010, Radio-spectrometer network e-Callisto:
http://www.astro.phys.ethz.ch/astro1/Users/cmonstei/papers/CRAF_21_8p.A4_12August.pdf

Status burst list:
I periodically went through all files from all locations to search for flares and put them into our burst list here: http://www.exp-astro.phys.ethz.ch/astro1/Users/cmonstei/instrument/callisto/Appdocs/FlaresCallistoNetwork2010.htm or here: http://www.exp-astro.phys.ethz.ch/astro1/Users/cmonstei/instrument/callisto/Appdocs/FlaresCallistoNetwork2010.xls

Currently, this takes me at least two hours per day which is quite a lot. Due to the fact that we have neither funding nor time to continue this activity I have to stop this activity to the end of 2010. From 1st of January 2011 onwards I'll concentrate and restrict to our own instruments at Bleien observatory (Phoenix-4 = 2 x Callisto 150-870MHz circular polarization) and a low frequency Callisto 20-80 MHz. Therefore, if you are interested to keep the burst list for your observatory you have to maintain the burst list yourself. If so, please try to keep the format as defined by NOAA (edited by Ed Erwin):
http://www.swpc.noaa.gov/ftpdir/indices/events/README
ftp://ftp.ngdc.noaa.gov/STP/SOLAR_DATA/SOLAR_RADIO/SPECTRAL/docs/

New software version V1.11 available here:
http://www.exp-astro.phys.ethz.ch/astro1/Users/cmonstei/instrument/callisto/ecallisto/e-callistoV111.zip

Latest upgrades are:
1. If you include the statement [autostart]=1 in your file 'callisto.cfg' then Callisto starts observation automatically after power (PC and Callisto) is switched on. Useful for observers with many power fails during the day or for locations who wish to switch of PC and Callisto during the night.
2. If you edit the file 'callisto.cfg' at run-time of Callisto all parameters can be changed in real-time and will automatically be applied except the communication port number.
3. Following keywords have been deleted from the configuration because the user should not change them, see example in the distribution zip-file 'callisto.cfg_'. Deleted are: rxbaudrate, low_band, mid_band, YTbuflen, XYbuflen, XYZbuflen, timerinterval, timerpreread and timerhexdata. The application will ignore these keywords. They are now fixed in software of the Callisto application. You can either use your old file and add the key word [autostart]=1 or [autostart]=0 and delete the obsolete ones. Or you take the example and edit your location parameter accordingly. Then rename 'callisto.cfg_' to 'callisto.cfg'
4. Now 'callisto.cfg' allows to spend separate path-names for FIT-data, log-file, light-curve file and spectral-overview file. Of course, you may still send all files into the same directory. But a couple of observers wanted to save these files at different storage locations.
5. Useless keywords like 'COMMENT' and 'HISTORY' have been deleted from FIT files because SSWIDL produces an error-message.

What I learned recently:
Never put mutual vowels like ä, ö, ü, è, é, à, î, ô, ñ, č, ç, etc. into any of the configuration parameter of 'callisto.cfg'. These special characters destroy the structure of the FIT-files and they cannot be read anymore! Always use exclusively 7-bit characters which are defined in the ASCII code.

Hints&Tricks:

Some versions of Windows 7 and also Windows XP block sometimes the execution of the application 'callisto.exe'. This, probably due to the fact that Callisto has never been registered at Microsoft as a user application. And it will never be registered.... There exists a 'trick' to handle this problem: Right mouse click to the application 'callisto.exe'. Go to preferences -> compatibility-mode and change it to any older version of Windows (XP, 2000, 98 or even 95)

If you have an old PC with a lot of applications running or if you do not have enough resources on your PC, you may want to change the priority level of the application 'callisto.exe'. For that you can make use of the command 'START' of Windows. Create a batch file named to 'startcallisto.bat' and edit the following text into it.
START "Highest priority for Callisto application" /REALTIME callisto.exe
Save the file in the same directory of callisto application.
And then every time execute this dedicated batch-file instead of double clicking to 'callisto.exe'. Don't forget to also edit the auto-start menu of Windows to automatically start Callisto with highest priority after boot process of the PC.

Kits for hobbyists:

The German publisher FUNKAMATEUR sells components to produce Callisto for very low cost. The hardware is NOT compatible with the existing Callisto but produces exactly the same output (FIT-files) and consumes identical input files. It was not possible to design a 100% compatible system due to the fact that Philips does not supply original tuners CD1316L/IV. These new kits are based on a new version of Philips tuner CD1316LS/IHP-3 which is neither software- nor hardware compatible. So printed circuit board and microcontroller ATmega165 had to go through a redesign.

Printed circuit board 18.50€ here:
http://www.box73.de/catalog/product_info.php?products_id=2243&osCsid=4ppch3p495tc41ipf2g72a65t2

Philips tuner 24.50€ here:
http://www.box73.de/catalog/advanced_search_result.php?osCsid=4ppch3p495tc41ipf2g72a65t2&keywords=tuner&osCsid=4ppch3p495tc41ipf2g72a65t2&x=0&y=0

Programmed chip 8.50€ here:
http://www.box73.de/catalog/product_info.php?products_id=2279&osCsid=4ppch3p495tc41ipf2g72a65t2

All other components can be found in the online-shop of FUNKAMATEUR here:
http://www.funkamateur.de/download/down3.htm

Partslist for HAM-version of Callisto here:
http://www.funkamateur.de/download-files/Stueckliste_eCallisto.pdf

All other documents, software, tools etc. can still be found here:
http://www.exp-astro.phys.ethz.ch/astro1/Users/cmonstei/instrument/callisto/ecallisto/applidocs.htm
Go only for documents with light-green background colour (HAM-version).

But be aware, you have to solder all SMD components yourself onto the printed circuit board. And you have to wind 2 high frequency transformers also yourself. There is no support foreseen neither from FUNKAMATEUR nor from our side at ETH. Nevertheless, it is an interesting opportunity for apprentice and students in developing countries to do solar radio observations or radio-monitoring.

My own business:

If you cannot produce and test the instrument in your workshop, I can produce it for you on a private basis. Just ask for prize, delivery time and conditions by sending an email to: cmonstein@swissonline.ch