

Actions after the PAON4 analysis meeting 16-Nov-16

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Agenda & slides available on <https://indico.lal.in2p3.fr/event/3350/>

Actions

- ***PAON4 analysis*** in the context of a instrumental paper based on \geq Sept. 16 observations:
 - The DAQ & electronic will stay the same till the end of the observations for this paper (till December 10th 2016)
 - **Qizhi & Jiao will work on analysis together to produce maps for their Ph. D.** Jiao has in hand a program to perform the map making while Qizhi has developed a pipeline to perform data cleaning, $G(t)$ & $g(\nu)$ determination, PAON4 geometrical survey using fringes fitting during source transit, and finally calibration and system temperature measurements.
 - The present observations have been carried out mainly toward Cygnus A and we will continue to use this source to target observations for the paper. By observation, it is supposed hereafter 24h hours Sky transit at a certain declination with respect to Cygnus A. From 6th to 16th September we gathered: $(0^\circ, +1^\circ, -1^\circ)$ two times, $(+2^\circ, -2^\circ, +3^\circ, -3^\circ)$ one time. **We consider that as soon as possible we would like to get: $(0^\circ, +1^\circ, -1^\circ, +2^\circ, -2^\circ, +3^\circ, -3^\circ)$ once more and possibly $(+4^\circ, -4^\circ)$ as well as $(+5^\circ, -5^\circ)$.** It would be useful to have an additional 0° scan every 3-4 days (e.g before $+3^\circ, -3^\circ$ and before $(+5^\circ, -5^\circ)$ scans. If possible, we should try to perform also $(+6^\circ, -6^\circ)$ scans at the end.
 - In the above map $\pm 5^\circ$ from Cygnus A, there will be signal from, Cygnus A (and X), Galactic 21cm HI as well as extra galactic sources and **Jean-Michel will continue to examine the list of such objects** possibly visible by PAON4.
 - We (JEC, RA) will continue to study the electronic and antenna induced cross talks by comparing different cross-correlations signals.
- ***Future but pré-NEBuLA DAQ*** upgrade PAON4 (Mid December 2016)
 - Switch to acquisition with ADC boards with RAW firmware (Wave Form) and FFT performed through software on front-end acquisition machines. Two front-end PC's, as well as a second 10 Gbits Ethernet will be added to the acquisition cluster.
 - This implies the upgrade of the system to SL 6 and the use of PCIExpress driver which has been developed by Monique.
- A Full test-bed will be deployed at LAL to validate the new driver + acquisition/correlator.
- ***Satellites survey for calibration:***
 - Steve has shown that there is a Pleiades of satellites that can be for-or-background to PAON4. A python tools can be useful to track such satellites (eg. GPS-F, GLONASS, Galiléo) during PAON4 observations. One possible usage could be that the POAN4 DAQ would launch the tool regularly. Details would be discussed with Claude.

- **NEBuLA** (on going work)
 - The work on the first prototype board is on going and will take at least 3 or 4 months. For a future board design Daniel & Cedric have already some ideas: correct the minor bugs, envisage to change the present FPGA to get a new (better) one those production will be guaranteed, repackaging to get a smaller board.
 - Spring 2017 is the target time for the fabrication of the second prototype board. We hope to equip PAON-4 with NEBuLA at the end of 2017.