HICluster/PAON2/Test

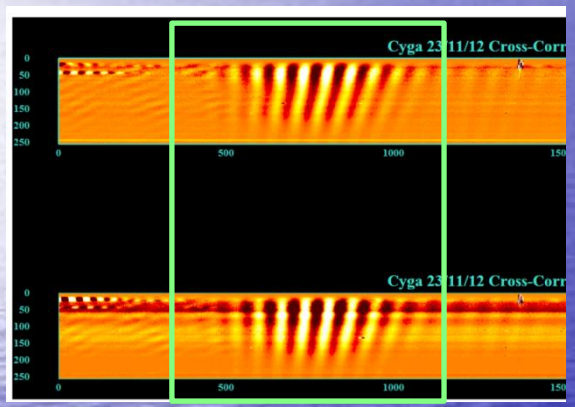
J.E Campagne & A.S. Torrento

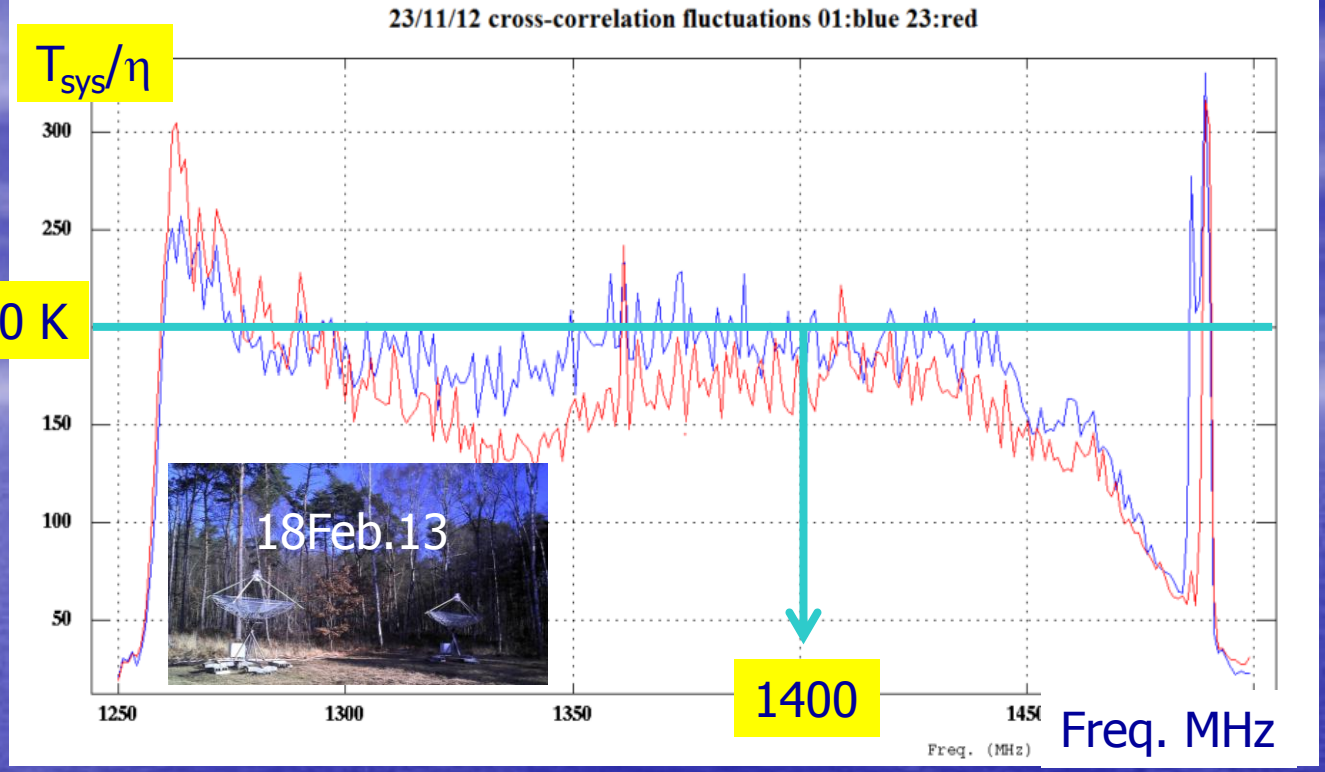
28/02/13

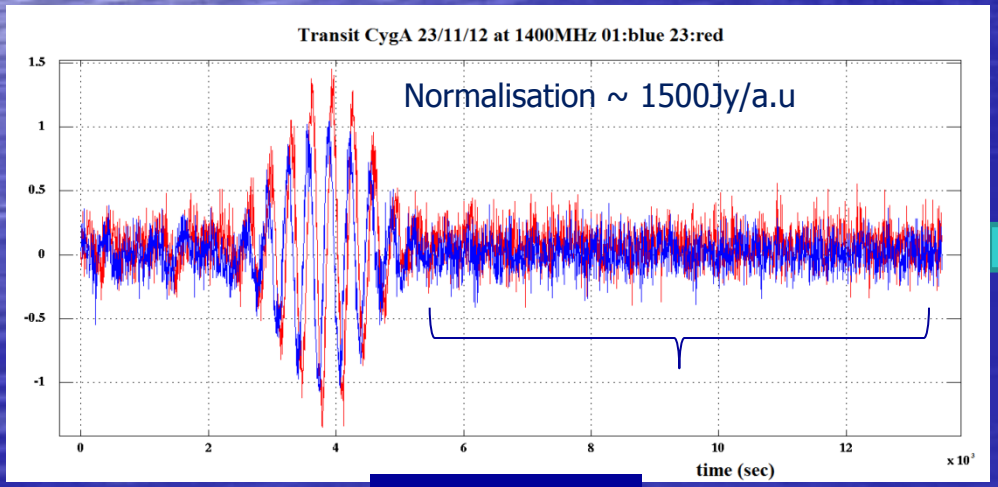
Tianlai video-meeting

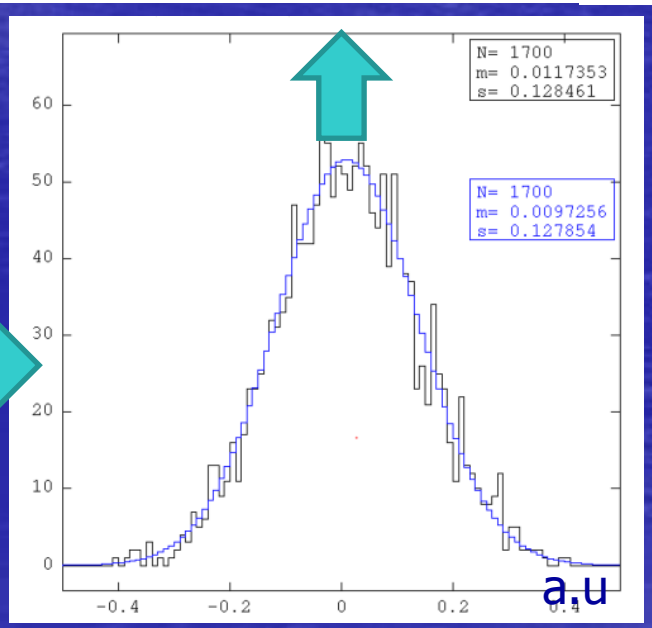
PAON2

CygA 23/11/12





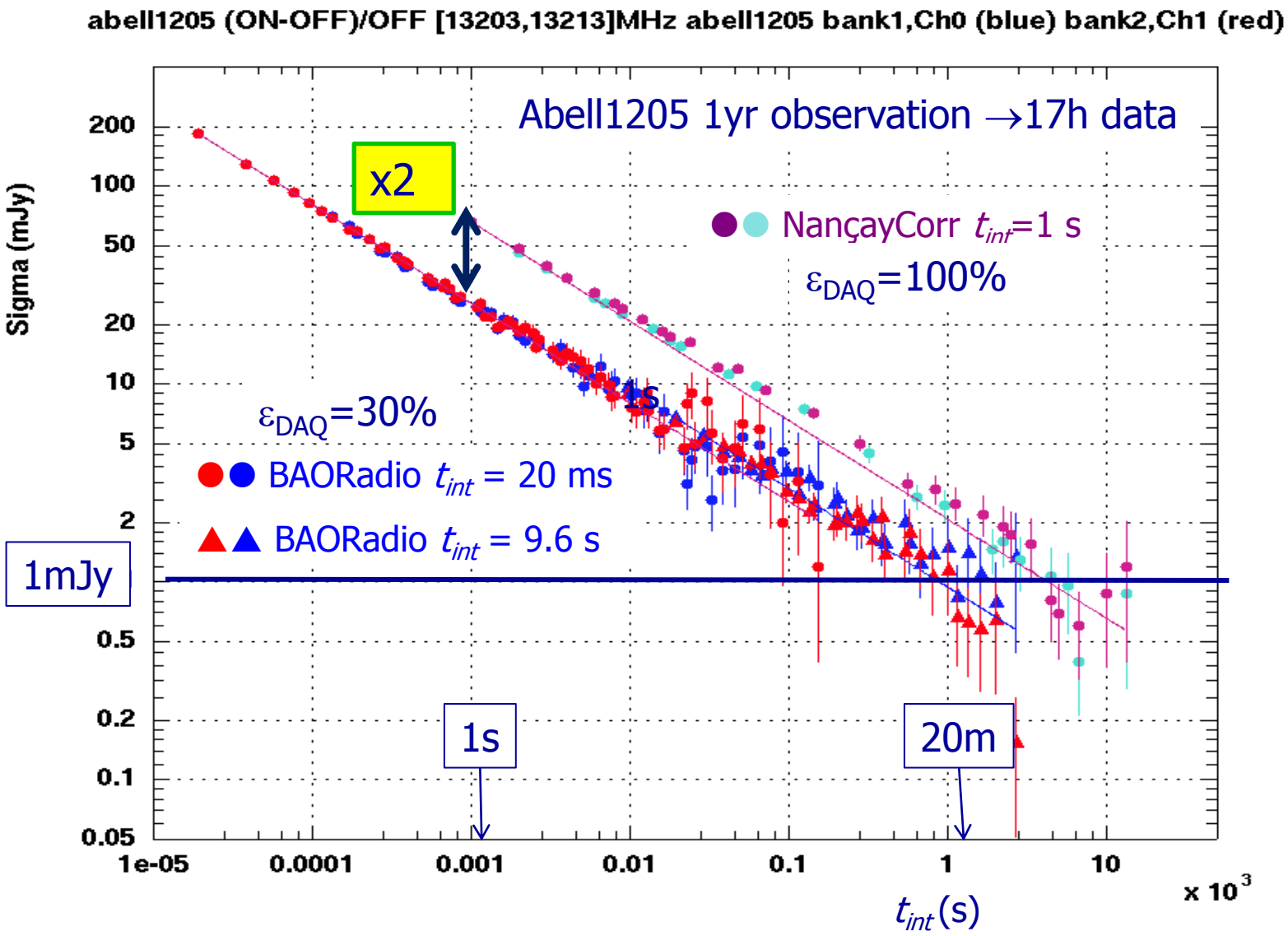




4h @ 1kHz

HI cluster: Sensitivity vs. t_{int}

A.S.T & J.EC Nançais/Amas-Corr/1.03.13



HI in clusters: sources

- Search for potential HI signals in nearby galaxy clusters
  - Abell 85 (HI?), Abell 1205, Abell 2440

Source	RA	Dec	ν_{HI} (MHz)	z	Observation period	Number of observations	T_{obs}
Abell 85	$00^h43^m16.99^s$	$-9^\circ09'46.99''$	1353	0.05	April – Dec 2011	35	8.1^h
Abell 1205	$11^h15^m08.37^s$	$2^\circ33'01.39''$	1316 1317.7 1320	0.08 0.078 0.076	March 2011 – January 2012	77	16.7^h
Abell 2440	$22^h24^m33.30^s$	$0^\circ53'18.59''$	1292 1301	0.099 0.091	March – June 2011	15	3.5^h
3C161	$06^h24^m43.09^s$	$-5^\circ51'14.00''$	1420.4	0	9th Dec 2012	1	6^m

HI in clusters: acquistion

- 2 acquisition chains:
  - BAORadio: LAL-IRFU electronics
  - NRT Correlator (NançayCorr): acquisition standard du NRT, « black box »

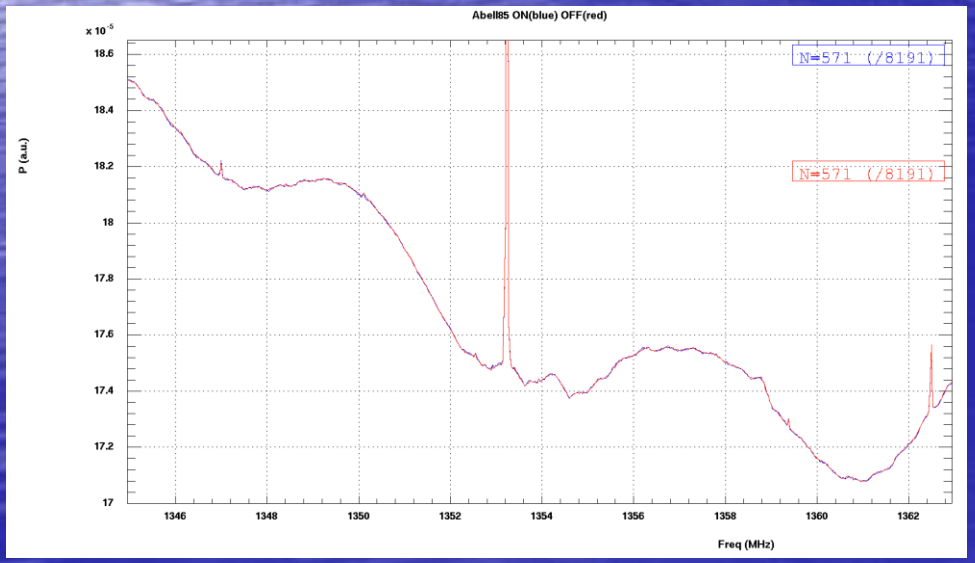
	Bandwidth	Freq bin	# Polars	Minimum t_{int}	Efficiency on-sky	Output
BAORadio	[1250,1500] MHz	30 kHz	2	30 μs	30 %	Signal vs. time (FFT offline)
NançayCorr	25 MHz including HI line	12 kHz	2	1 s	100 %	Spectrum / P_{tot}

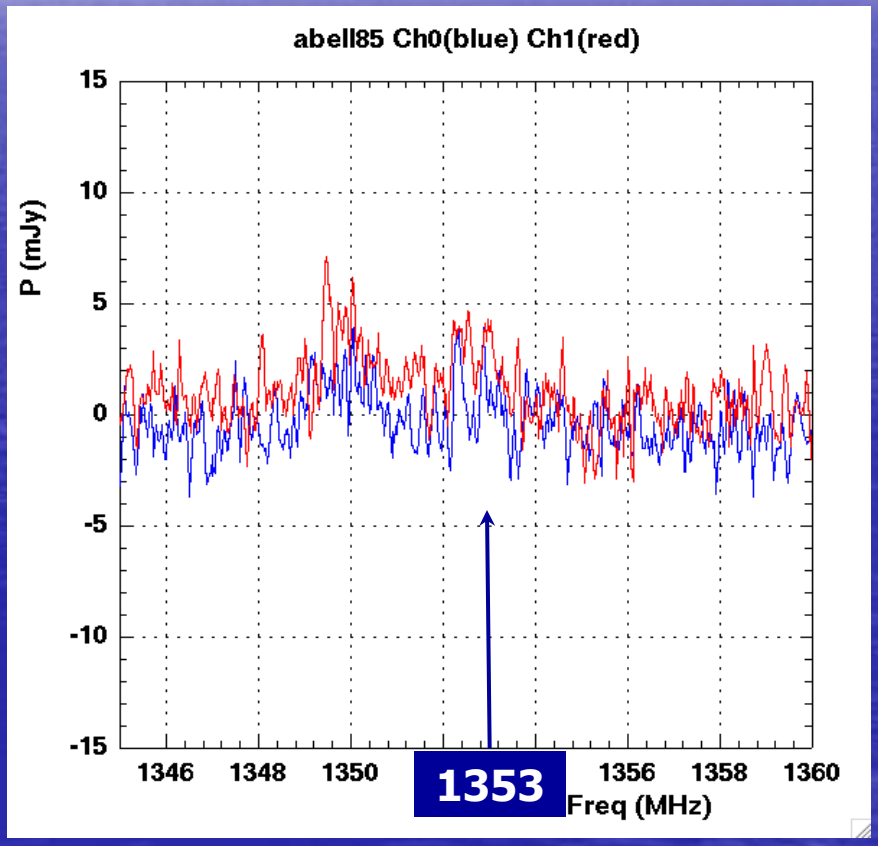
HI cluster: HI signal in Abell85

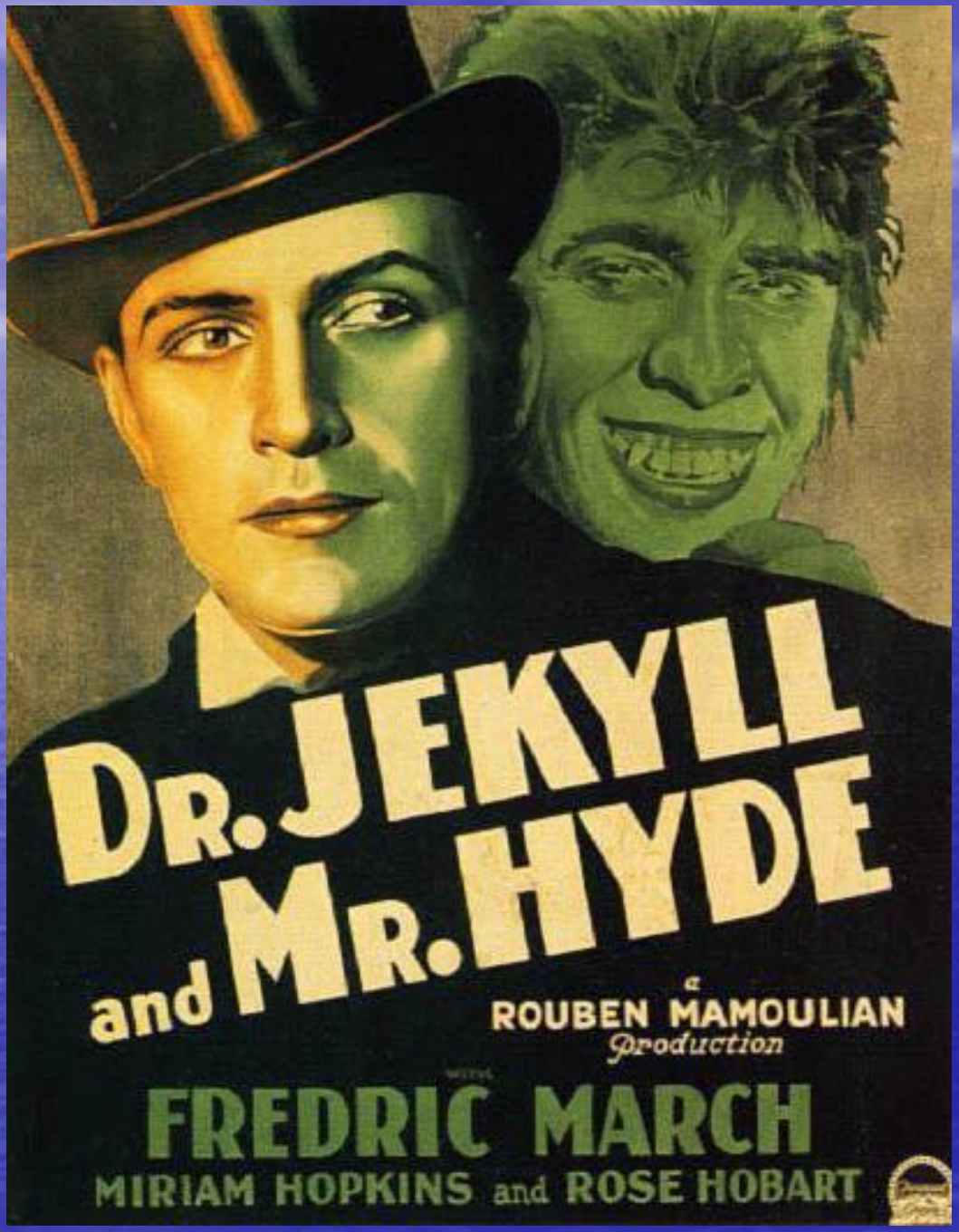
- No HI signal has been detected

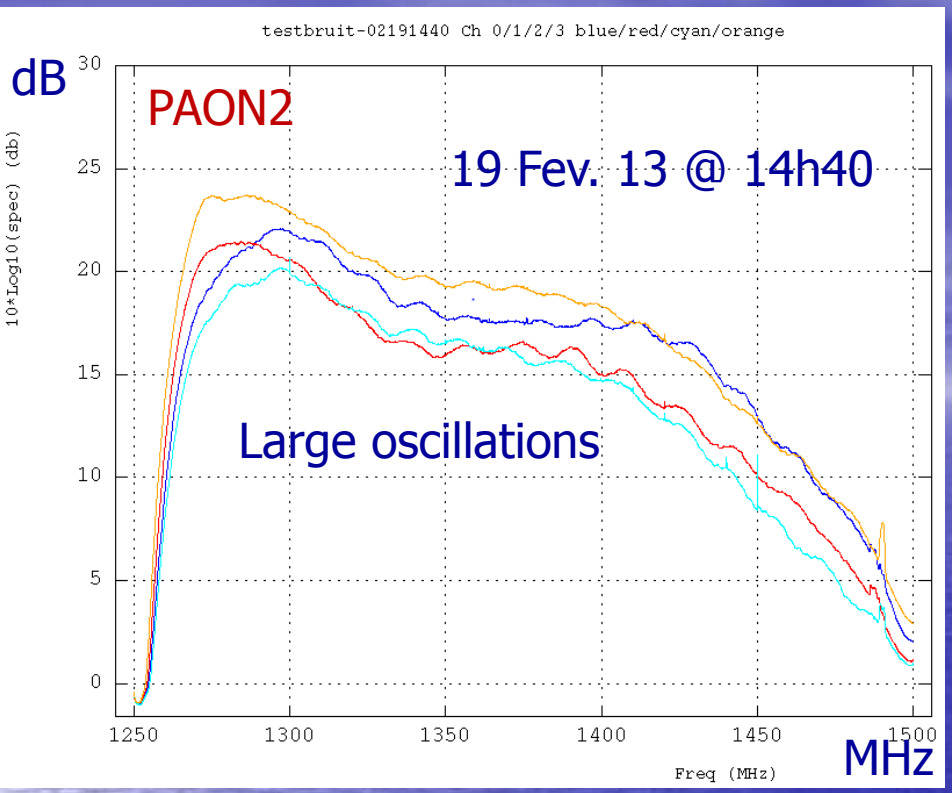
After 2h of integration (eff. Included) $\sigma \sim$ 1÷2mJy

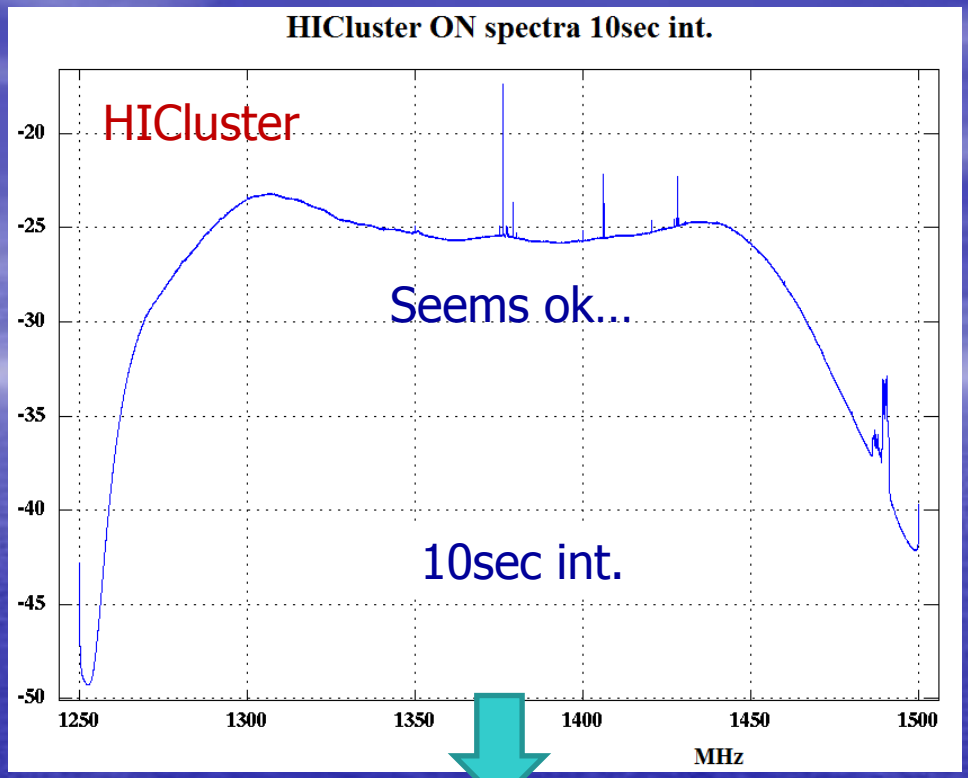
(Abell 85, claim detection by Bravo-Alfaro A&A 495, Issue 2, p.379-387,2008 HI flux ~ 1÷3 mJy)

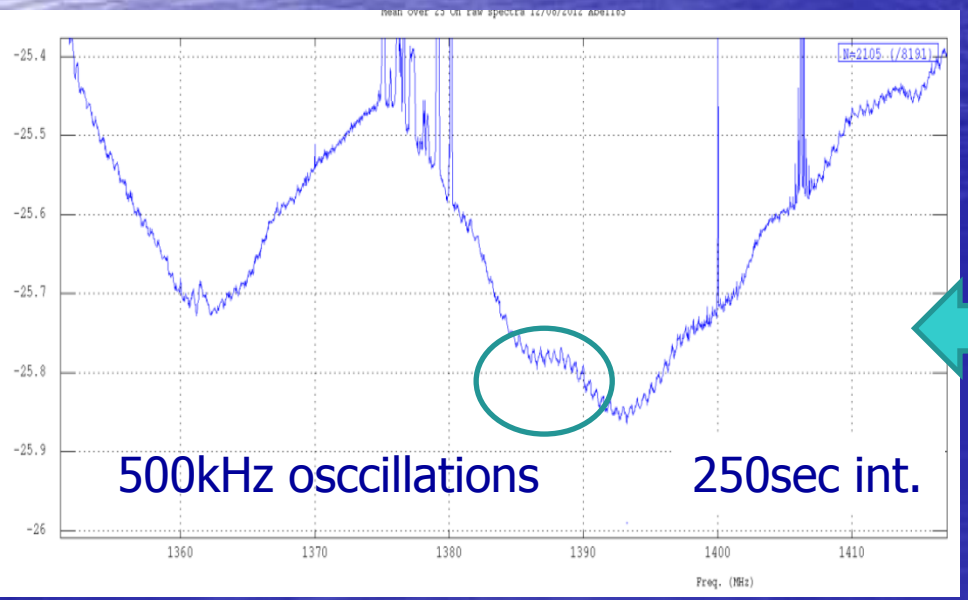


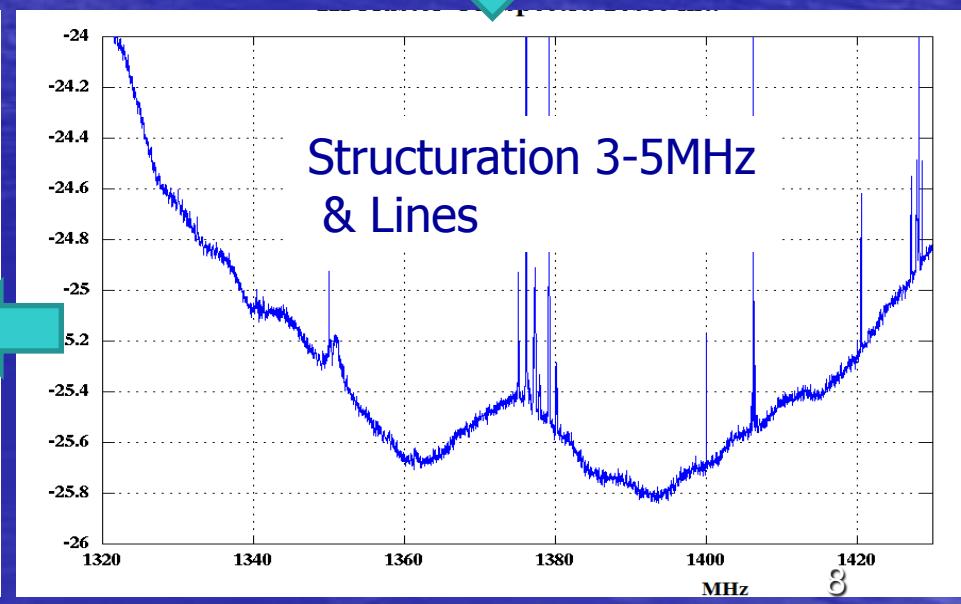



DR. JEKYLL
and MR. HYDE
a
ROUBEN MAMOULIAN
Production
FREDRIC MARCH
MIRIAM HOPKINS and ROSE HOBART

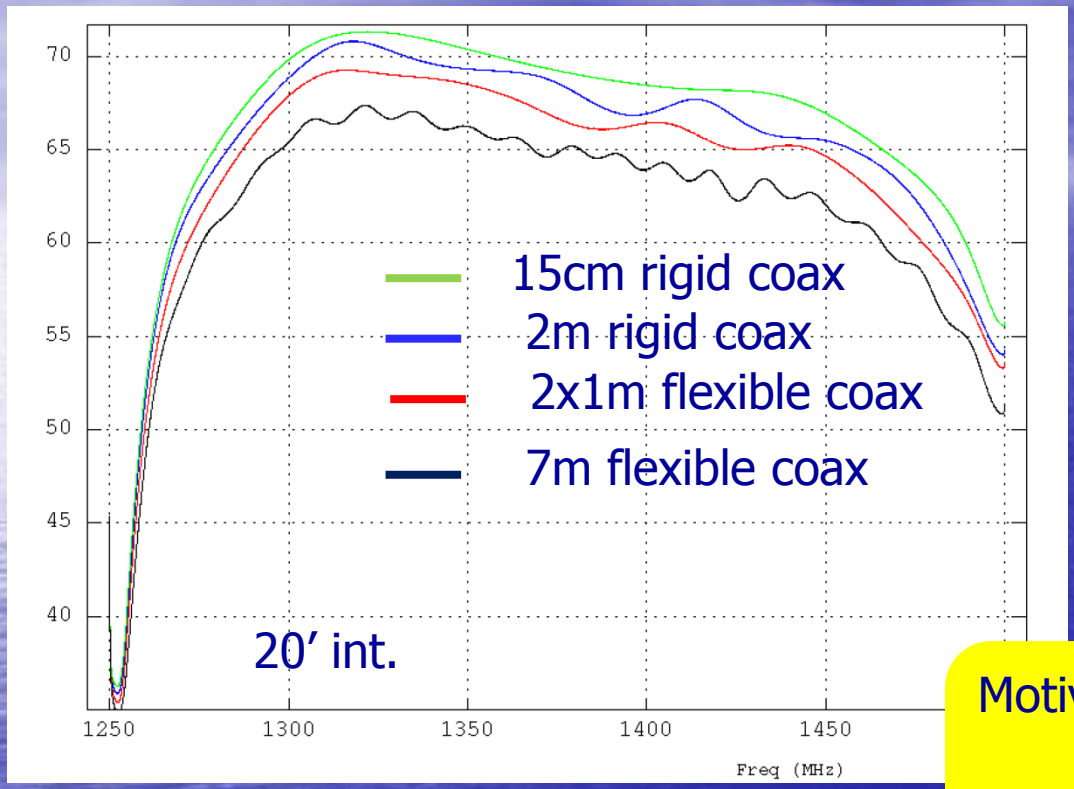

testbruit-02191440 Ch 0/1/2/3 blue/red/cyan/orange
dB
PAON2
19 Fev. 13 @ 14h40
Large oscillations
MHz
10*Log10(spec) (db)
Freq (MHz)


HICluster ON spectra 10sec int.
HICluster
Seems ok...
10sec int.
MHz


500kHz osccillations
250sec int.
Freq. (MHz)


Structuration 3-5MHz
& Lines
MHz

LAL Test bench



Empirical formula

$$\Delta\nu \, L_{cable} \sim 96 \, \mathrm{MHz.m}$$

Good also to explain the 500kHz with 66% velocity Factor. 300m ~ NRT secondary miror to chariot miror.

Motivation for new electronic R&D
AS CLOSE AS POSSIBLE
to the feed for digitization and optical transfert to visibility calculator.