

Proposal Identification	07_0136			
Project Title	[C II] in the Low-Metallicity Environment of the Outer Galaxy			
Principle Investigator	Carsten König	koenig@mpifr-bonn.mpg.de		
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Observations				
Mission Identification	2020-03-05_GR_MILO_667, 2020-03-10_GR_MABEL_670, 2020-03-13_GR_MARSHA_674			
Flight date	March 5, 10 and 13, 2020			
GREAT configuration	front-ends: LFA / HFA	back-ends: 4GFFT spectrometers		
Astronomical Sources	G243P78-0P24	Scan	34492 - 34503	lines: CII, OI
	G235P05-1P53		34521 - 34532	
	G242P92-0P52		35069 - 35080	
	G235P22-1P67		35081 - 35093	
	G239P68-0P80		35564 - 35576	
	WB89_789		35618 - 35628	
Calibrated data products based on: kosma_calibrator ver. February 2020 , GILDAS software ver. February 2020a				

product level	file name	description
3	Cycle7_GR_0T_07_0136_Ta.great Cycle7_GR_0T_07_0136_Tmb.great	Calibrated to T_A^* scale ($\eta_f = 0.97$). Calibrated to T_{mb} scale with: η_{mb} (HFA_V) = (0.65, 0.66, 0.69, 0.69, 0.70, 0.65, 0.70); η_{mb} (LFA_H) = (0.66, 0.64, 0.67, 0.69, 0.65, 0.66, 0.68); η_{mb} (LFA_V) = (0.63, 0.64, 0.66, 0.63, 0.64, 0.64, 0.65) All scans have been quality validated.

4	<p>Cycle7_GR_OT_07_0136_G243P78-LFA_final.great Cycle7_GR_OT_07_0136_G243P78-HFA_final.great</p> <p>Cycle7_GR_OT_07_0136_G235P05-LFA_final.great Cycle7_GR_OT_07_0136_G235P05-HFA_final.great</p> <p>Cycle7_GR_OT_07_0136_G242P92-LFA_final.great Cycle7_GR_OT_07_0136_G242P92-HFA_final.great</p> <p>Cycle7_GR_OT_07_0136_G235P22-LFA_final.great Cycle7_GR_OT_07_0136_G235P22-HFA_final.great</p> <p>Cycle7_GR_OT_07_0136_G239P68-LFA_final.great Cycle7_GR_OT_07_0136_G239P68-HFA_final.great</p> <p>Cycle7_GR_OT_07_0136_WB89-LFA_final.great Cycle7_GR_OT_07_0136_WB89-HFA_final.great</p>	<p>Created with the scripts: Cycle7_GR_OT_07_0136_'SourceName'_'LineName'.cls</p> <p>Where 'SourceName' is either G243P78, G235P05, G242P92, G235P22, G239P68, or WB89, and 'LineName' is either CII or OI.</p> <p>0-4st order spectral baseline removed. HFA pixels show ripples, therefore high order baselines were removed. HFA pixel 5 was under pumped and should not be used for analysis.</p> <p>Dropped spectra with problematic receiver response.</p> <p>Spectra resampled to ~0.25 km/s. Averaged spectrum for CII and OI</p>
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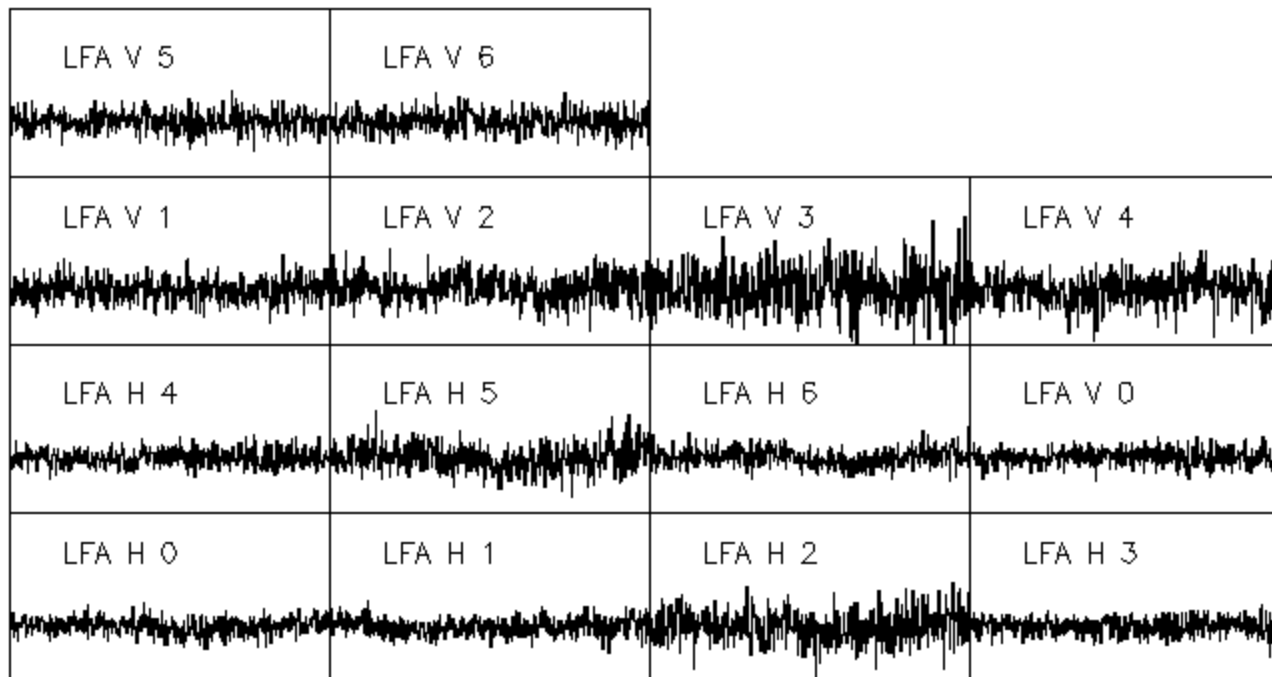
Notes: (1) Heyminck, S. et al.: GREAT: the SOFIA high-frequency heterodyne instrument. *Astron.Astrophys.* 542, L1 (2012)
(2) Guan, X. et al.: GREAT/SOFIA atmospheric calibration. *Astron.Astrophys.* 542, L4 (2012)

(3) Risacher, C. et al.: First Supra-THz Heterodyne Array Receivers for Astronomy with the SOFIA Observatory. IEEE Trans.TST 6,199 (2016)

(4) Risacher, C. et al.: The upGREAT 1.9 THz multi-pixel high resolution spectrometer for the SOFIA Observatory, Astron.Astrophys. 595, 34 (2016)

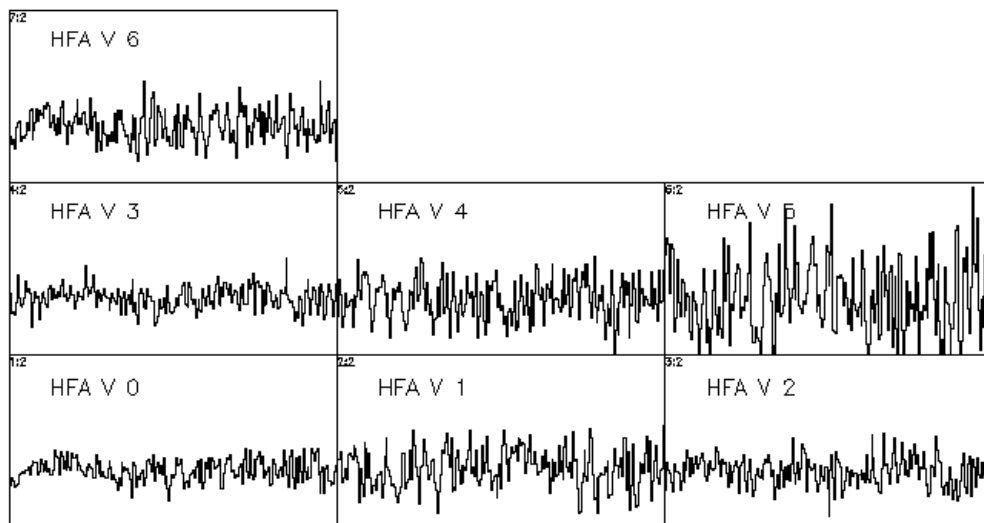
G243P78 CII:

Not detected. The rms of the final spectra go from 0.26 to 0.74 K. The average of all pixels give a tentative detection.



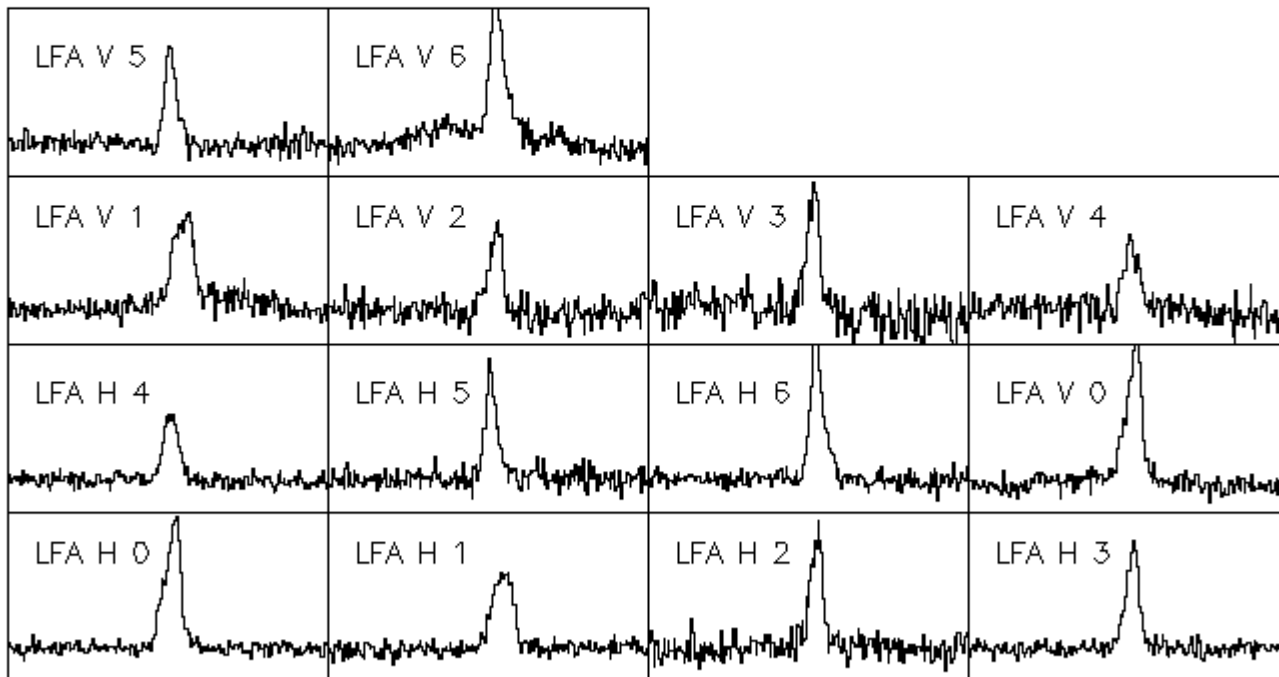
G243P78 OI:

Not detected. The rms of the different pixels goes from 0.36 to 1.28 K



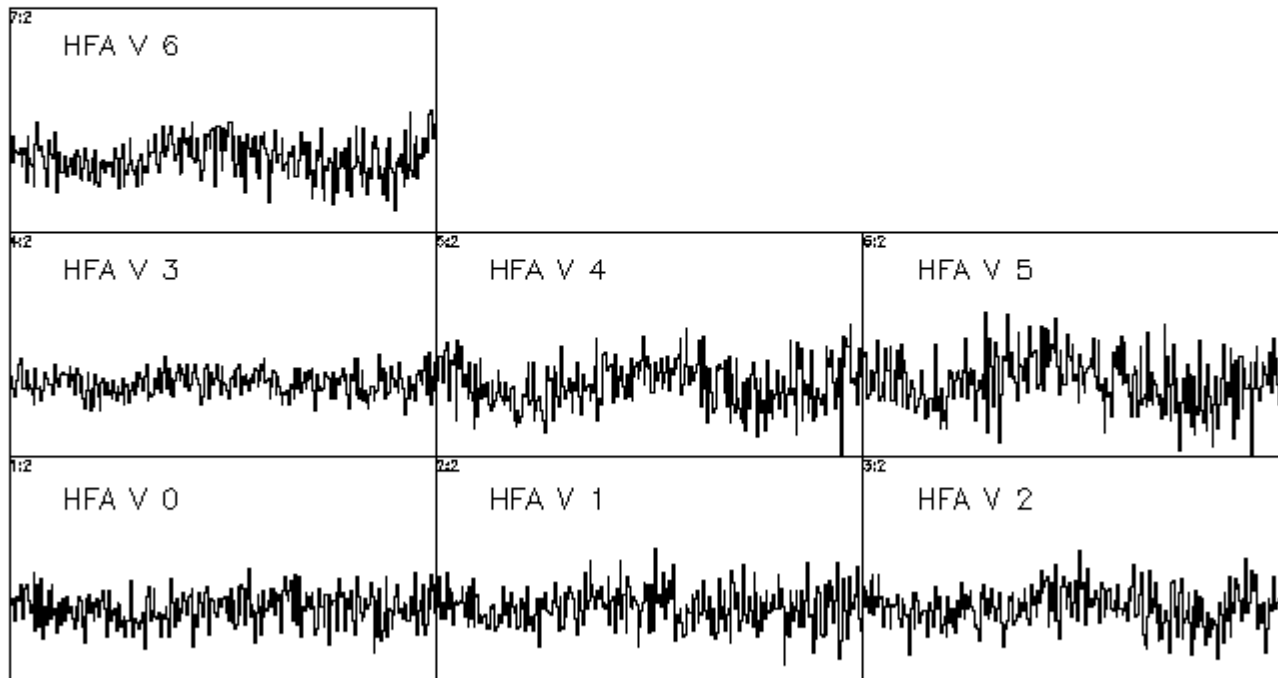
G235P05 CII:

Clearly detected in all pixels. The rms of the different pixels goes from 0.22 to 0.65 K. Line intensity goes from ~3 to ~6 K.



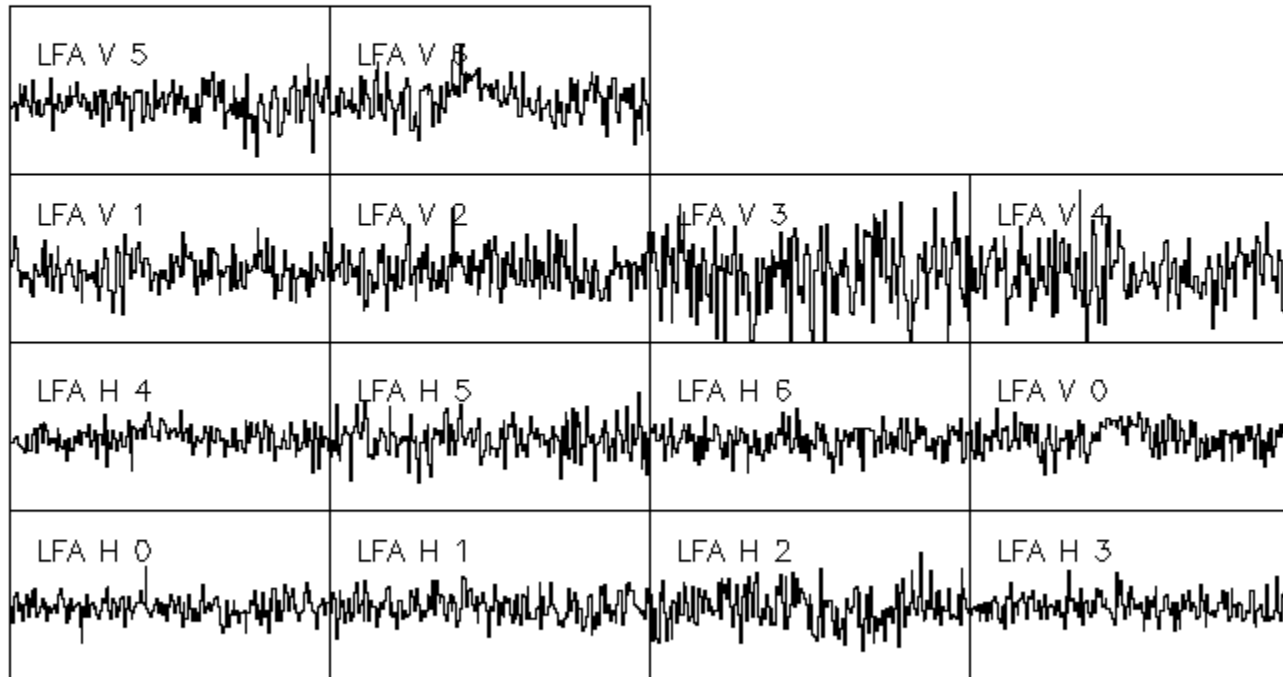
G235P05 OI:

Not detected. The rms of the different pixels goes from 0.33 to 0.71 K.



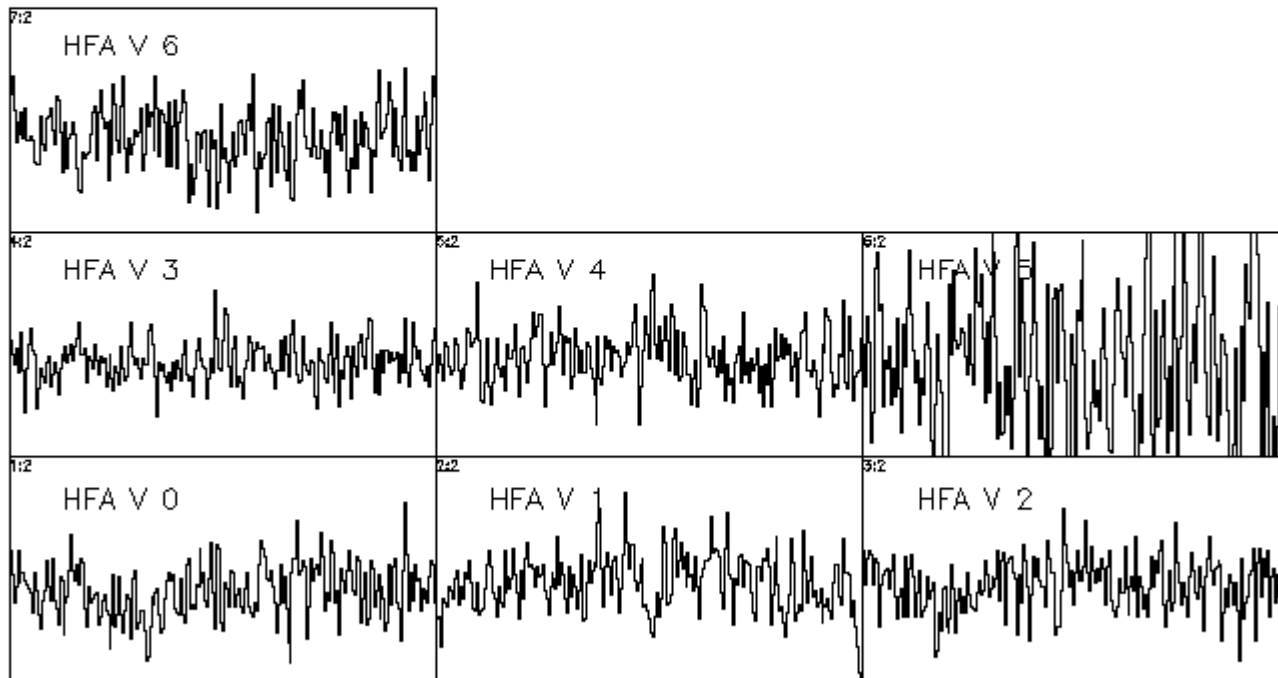
G242P92 CII:

Not detected. The rms of the different pixels goes from 0.22 to 0.70 K. The average of all pixels give a tentative detection.



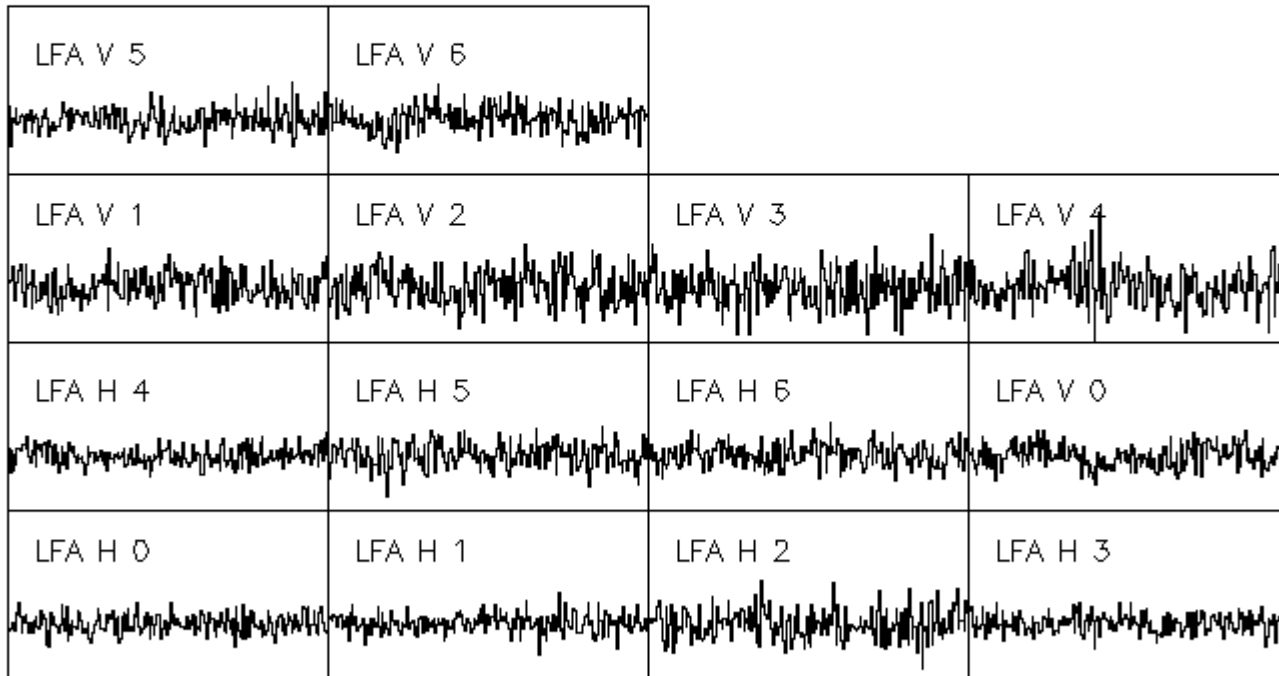
G242P92 OI:

Not detected. The rms of the different pixels goes from 0.31 to 1.21 K.



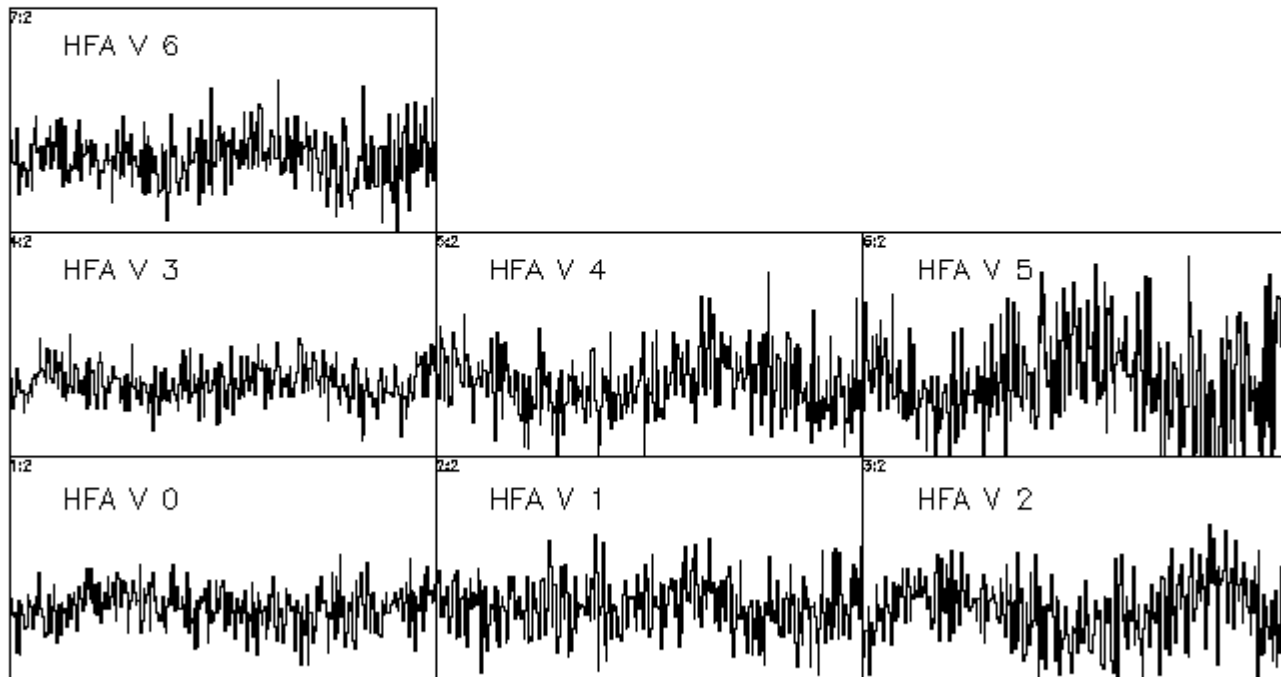
G235P22 CII:

Not detected. The rms of the different pixels goes from 0.24 to 0.50 K. Still no sign of CII after averaging all pixels.



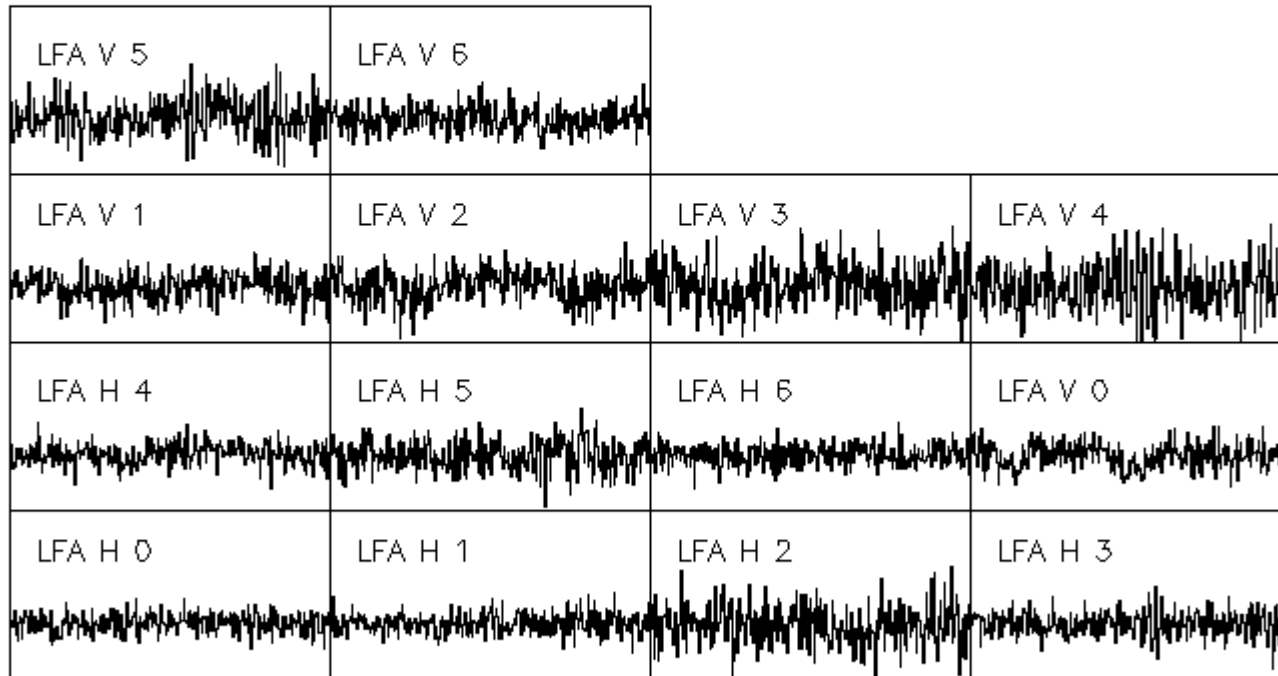
G235P22 OI:

Not detected. The rms of the different pixels goes from 0.53 to 0.84 K.



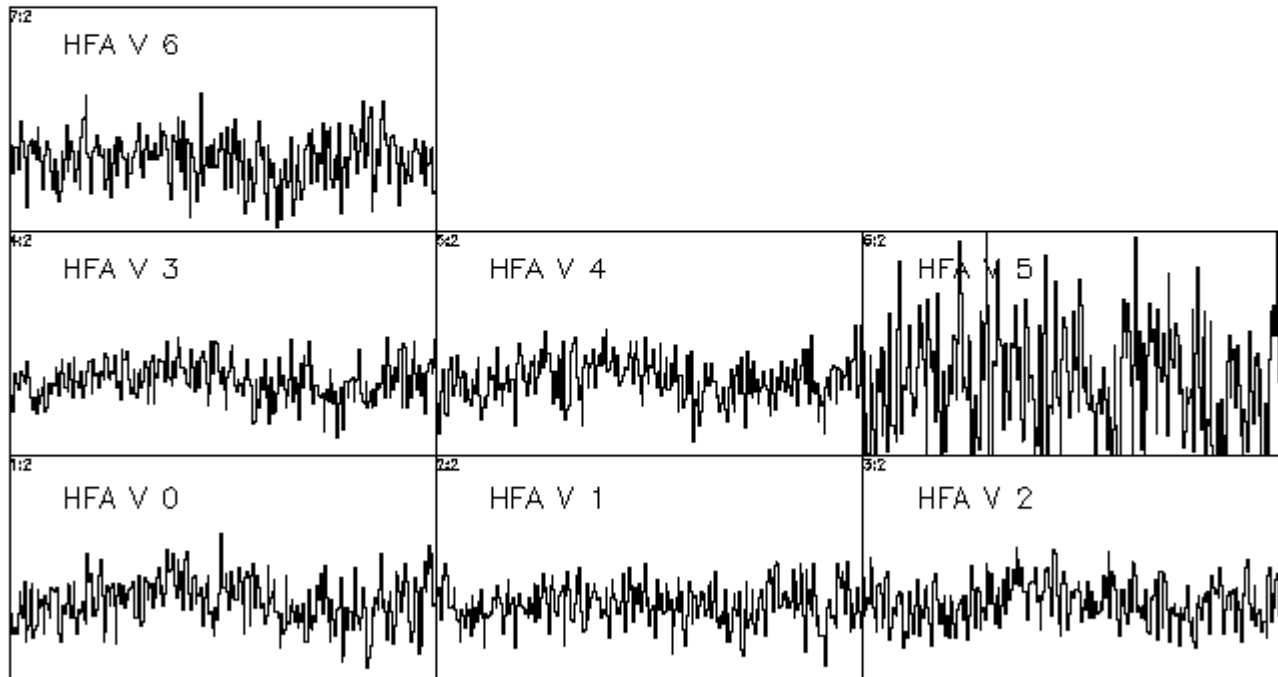
G239P68 CII:

Not detected. The rms of the different pixels goes from 0.24 to 0.58 K. The average of all pixels still does not show a signal of CII.



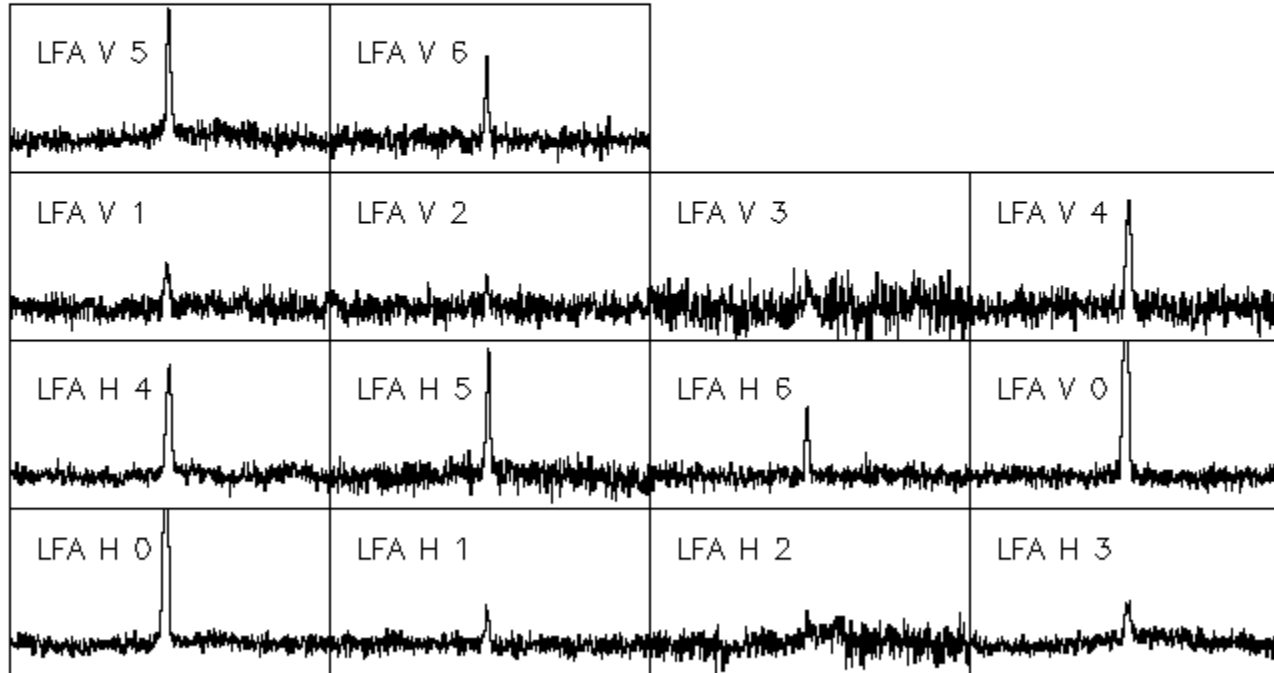
G239P68 OI:

Not detected. The rms of the different pixels goes from 0.49 to 1.57 K



WB89 CII:

Nicely detected in almost all pixels. The rms of the different pixels goes from 0.23 to 0.63 K. When detected, the line intensity goes from ~1.5 to ~12 K.



WB89 OI:

Weak detection in some pixels, HFA V 0 being the best. The rms of the different pixels goes from 0.26 to 0.47 K.

