FLASH Spectral Line Data Validation Report

Last modified: 11-Nov-2020 by Hyein Yoon Original script for WALLABY: 24-Mar-2020 by Bi-Qing For (ICRAR/UWA)

Notes for FLASH:

- This tool uses ASKAPsoft producs. FITS-datacubes are needed for getting major and minor beam sizes only (from the header).
- Not all data are availble, so some dummy files were used to run the script successfully.
- 1) Combining all info from spectra + continuum
- 2) Any other additional items to be required?

Observation

SBID	No. of Antennas	Obs Start Date/Time	Obs End Date/Time	Duration (hr)	Field	R.A.	Decl.	Total Bandwidth (MHz)
13285	36	18-Apr-2020/12:46:48.7	18-Apr-2020/14:46:54.9	2.0	FLASH_G9A	08:47:35.5	+00.30.00.0	288.0

- col 1: from input by user
- col 2-8: from /metadata/mslist-*.txt
- col 9: from /metadata/mslist-Science*.txt

Processed Image Cube

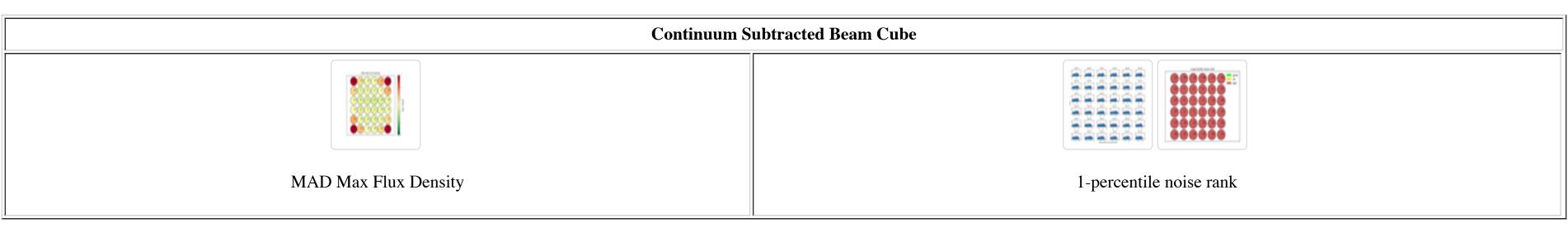
ASKAPsoft version*	Cal SBID	Frequency Range (MHz)	Central Frequency (MHz)	Channel Width (kHz)	Synthesised Beam (arcsec x arcsec)	Beam Logs	Flagged Visibilities	Flagged Antennas	Expected RMS
2020-09-18T14:07:43	1328	711.5999.481	855.4907	18.519	30x30	000000	• 5 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	Click here	

- col 1: from /slurmOutput/*.sh if more than one version of ASKAPsoft is used for the whole reduction, the latest one is reported.
- col 2: from /diagnostics/cubestats-/cubeStats*linmos.contsub.txt (mosaic contsub)
- col 3-4: from /metadata/mslist-Science*.txt
- col 5: from FITS-datacube (CURRENT VERSION: continuum subtracted beam00 cube Nov 22 ver.; too large beam size? depending on robust parameter?)
- col 6: from ./SpectralCube_BeamLogs/beamlogs*.txt
- col 6: Bi-qing's notes: Evaluating each channel of each beam if ASKAPSoft fails to synthesize the beam, bmaj and bmin to 30 arcsec. bmaj and bmin for the first few channels are always zero.
 col 7: from /flagSummary/*.flagSummary
 col 8: from /flagSummary/*.flagSummary (flagged fraction) + theoretical rms estimation (based on input values)

Beams Statistics

Beam Image Cube	Continuum Subtracted Beam Cube	Residual Beam Cube
Min, Max, 1 percentile	Min, Max, 1 percentile	Min, Max, 1 percentile
Stdev, MADFM	Stdev, MADFM	Stdev, MADFM

- col 1-3: from beamMinMax Plots
- why one percentile?



- col 1: from beamMinMax Plots - col 2: from CubeStat*contsub.txt

Mosaic Statistics

Image Cube	Continuum Subtracted Cube	Residual Cube	Number of Bad Channel	Missing Data (Channel)
			4044 Click here	Yes < 100, n= 8

- col 1-3: from cubePlots
- col 4: from CubeStat*contsub.txt

Source and Noise Spectra from five bright components

Component 01a	Component 01b	Component 02a	Component 03a	Component 03b
10/33 chunks > 5-sigma	13/33 chunks > 5-sigma	13/33 chunks > 5-sigma	9/33 chunks > 5-sigma	11/33 chunks > 5-sigma

- Spectra toward five brightest components - Deviation from noise spectra (9 MHz chunks)

Median noise flux density - noise Spectra

Low frequency (first 5,000 channels)	High frequency (last 5,000 channels)
199 component (outside 3.2 deg)	139 component (outside 3.2 deg)
SELECTION TO A SELECT	300 900 Note the distance of the control of the con
RA offset (red points: outside 3.2 deg)	RA offset (red points: outside 3.2 deg)
DEC offset (red points: outside 3.2 deg)	DEC offset (red points: outside 3.2 deg)

- Mean noise flux density noise spectra
- stable out to 3.2 degree

Continuum - comparison with NVSS

Continuum image	Statistics	RA/DEC offset	Flux comparison	Flux vs distance from image centre
Wildlife berg species when have 100 were have	Size Size	23 23 24 25 25 25 25 25 25 25 25 25 25 25 25 25	ODE OF DEFICION STANSFORM TO A STANS	LYGONOG TOWN Image center (deg)

- col 1: continuum image + selavy bright componenets - col 2: size & flux histogram
- col 3: RA/DEC offset (comparison with NVSS)
- col 4: flux difference (comparison with NVSS)
- col 5: primary beam correction check (comparison with NVSS)
- data from Vizier NVSS (Condon+ 1998) - a resolution of 45 arcsec