

CARTA Demo



Emily Moravec



Use CARTA in Archive

Go down a few and go to spw 4 (31) -> CARTA—> open in new tab

ALMA Science Archive | CARTA

https://almascience.nrao.edu/aj/?observationsSourceName=GM_Aur&observationsBand=6&observationsProjectCode=2018.1

Search | 3 column filters active | Explore and download

Previews for GM_Aur

ALMA

README | QA2 report | Weblog | Weblog

Line sensitivity native (estimate): 0.251 uJy/beam@native
Polarizations: XX YY
Array: 12m

SPW 4: 220.676..220.735GHz, 141.113 kHz, XX YY

member.uid_A001_X133d_X19cd.GM_Aur_sci.spw31.cube.lpbcor.fits 822 MB

Band: 6
Frequency type: line
Frequency range: 220.676..220.735
Frequency resolution: 141.113 kHz
Continuum sensitivity: 0.039
Line sensitivity 10km/s (estimate): 0.709 mJy/beam@10km/s
Line sensitivity native (estimate): 0.251 uJy/beam@native
Polarizations: XX YY
Array: 12m

member.uid_A001_X133d_X19cd.GM_Aur_sci.spw39.cube.lpbcor.fits 2 GB

Band: 6
Frequency type: line
Frequency range: 220.71..220.769
Frequency resolution: 141.113 kHz

Observations (5)

ALMA source name: GM_Aur

Observation ID	Source Name	Start Time	Stop Time	Band	Resolution	Frequency Range	Observation Date	Publications	Ang. res.	Min vel. res.
2018.1.01230.S	GM_Aurigae	04:55:10.983	+30:21:59.540	6	0.0175	251.503..269.987 GHz	2019-12-27	2	0.182	0.137
2018.1.01055.L	GM_Aur	04:55:10.980	+30:21:59.000	6	0.0415	248.059..265.999 GHz	2021-01-31	29	0.101	0.159
2018.1.01055.L	GM_Aur	04:55:10.980	+30:21:59.000	6	0.0294	217.176..234.927 GHz	2021-02-19	29	0.124	0.091

base date | Publications | Ang. res. | arcsec | Min vel. res. | k

9-11-15 | 29 | 0.287 | 0.159

9-12-27 | 29 | 0.330 | 0.091

248 GHz | 250 GHz | 260 GHz

6 | 7 | 8 | 9 | 10

CO v=0-0 3-2
HCN v=0-0 3-2
CCH v=0-0 N=3 J=5/2-3/2 l=3-2
H13CN v=0-0 J=5-2
3450 7(6)-6(6)
c-HCCCN v=0-0 (6,2,5)-5(1,4)
HClRO v=0-0 3-2
c-HCCCN v=0-0 (6,2,5)-5(1,4)
3450 5(6)-4(6)
CS v=0-0 5-4
SO2 v=0-0 5(4)-4(1,3)
HCN v=0-0 J=26-25 l=26
SO2 v=0-0 4(2)-3(1,3)

Use CARTA in Archive

Click back on archive screen and go back to dataset. Then Click on dataset spw 6 (spw37) and append image. Now we've got both.

Since in archive, no workspace so can't save any results. So this is data exploration - use to decide what to download. Final analysis on your machine.

View - Layouts - Cube Analysis

- Mouse around on image
- Slide through channels
- Move image list
- Only one image moving?
 - Match XY (coords) and Z (spectral)
 - See CO lines

Use CARTA in Archive - Get Contin. Image

File type -> image -> scroll to multiple spws 5-11, cont, tt0, pbcor -> CARTA

The screenshot shows the ALMA Science Archive interface. The browser address bar displays `https://almascience.nrao.edu/aq/?observationsSourceName=GM_aur&observationsBand=4`. The search bar contains the text "2 column filters active". A sidebar on the left lists various filters: Project (1), Group ObsUniSet (1), Member ObsUniSet (1), Source (1), Collection (1), Array (1), File type (8), and File class (2). The "File type" filter is expanded, showing a search box and several options, with "image/x-fits" selected. The main table lists files with columns for Name, Size, Project, and GOUS. A red circle highlights a row in the table with the following details:

Name	Size	Project	GOUS
member.uid_A001_X1284_X172b.GM_Aurigae_sci.spw5_7_9_11.cont.tt0.pbcor.fits	(product) 215 MB	2017.1.01151.S	uid://A001/X1284/X172
member.uid_A001_X1284_X172b.GM_Aurigae_sci.spw9.mfs.l.pbcor.fits	(product) 215 MB	2017.1.01151.S	uid://A001/X1284/X172
member.uid_A001_X1284_X172b.GM_Aurigae_sci.spw5_7_9_11.cont.l.tt0.pbcor.fits	(product) 215 MB	2017.1.01151.S	uid://A001/X1284/X172
member.uid_A001_X1284_X172b.GM_Aurigae_sci.spw5.mfs.l.manual_image.pbcor.fits	(product) 215 MB	2017.1.01151.S	uid://A001/X1284/X172
member.uid_A001_X1284_X172b.GM_Aurigae_sci.spw0_1_2_3.mfs.l.manual_image.pbcor.fits	(product) 198 MB	2017.1.01151.S	uid://A001/X1284/X172

The detailed view for the selected file shows a circular plot and the following metadata:

- Band: 4
- Frequency range: 148.997.150.982
- Frequency resolution: 31,250 kHz
- Line sens. (10km/s): 0.401mJy/beam
- Line sens. (native): 0.02uJy/beam
- Polarizations: XX YY
- Array: 12m

Use CARTA in Archive - Get Contin. Image

Append spw5 - 7500,7500,1,1 (no spw information = cont)

The screenshot displays the CARTA web interface. On the left, a radio astronomy image is shown with a color scale from 0.00 to 0.03. The image is a semi-circular field of view. A 'Z Profile' plot is visible on the right side of the image, showing a peak in the continuum level. The 'File Browser' window is open, displaying a table of files:

Filename	Type	Size	Date
member.uid__A001_X1284_X172b.GM_Aurigae_sci.spw5	FITS	225.0 MB	16:33
member.uid__A001_X133d_X19cd.GM_Aur_sci.spw37.cul	FITS	1.7 GB	16:12
member.uid__A001_X133d_X19cd.GM_Aur_sci.spw31.cul	FITS	861.6 MB	16:09
member.uid__A001_X14c2_X1d.GM_Aur_sci.spw25.cube	FITS	248.6 MB	15:58

The 'File Information' panel for the selected file shows the following details:

```
Name = member.uid__A001_X1284_X172b.GM_Aurigae_sci.spw5_7_9
HDU = 0
Data type = float
Shape = [7500, 7500, 1, 1]
Number of channels = 1
Number of polarizations = 1
Coordinate type = Right Ascension, Declination
Projection = SIN
Image reference pixels = [3751, 3751]
Image reference coords = [04:55:10.9830, +030.21.59.5400]
Image ref coords (deg) = [73.7958 deg, 30.3665 deg]
Pixel increment = [-0.0076", 0.0076"]
Pixel unit = Jy/beam
Celestial frame = ICRS
Spectral frame = LSRK
Velocity definition = RADIO
Restoring beam = 0.0635543" X 0.0379999", -15.5021 deg
RA range = [04:55:08.781, 04:55:13.185]
```

The 'Z Profile' plot shows a peak in the continuum level, with a value of approximately 4.00e-2. The 'File Information' panel also shows the 'Header' information, including the file name, HDU, data type, shape, number of channels and polarizations, coordinate type, projection, image reference pixels, image reference coordinates, image reference coordinates in degrees, pixel increment, pixel unit, celestial frame, spectral frame, velocity definition, restoring beam, and RA range.

Use CARTA Zoom in on Cont - Disk!

Match XY and get CO in the other two images

The screenshot displays the CARTA software interface with three astronomical images and a Z Profile plot. The top-left image shows a bright, curved structure. The top-right image shows a similar structure with a different color scale. The bottom-left image shows a zoomed-in view of a small region with a bright spot. The Z Profile plot on the right shows the value in Jy/beam versus [LSRK] Frequency (GHz).

WCS: (4:55:11.4796, 30:21:58.096);
Image: (2904, 3560); Value: 2.12341e-5 Jy/beam ;
Polarization: Stokes I

Image	Layers	Matching	Channel	Polarization
0	member.uid__A00'	XY Z R	231	Stokes I
1	member.uid__A00'	XY Z R	463	Stokes I
2	member.uid__A0i	XY R	0	Stokes I

Spectra

Can change active image in Z-profile

The screenshot displays the CARTA web interface for spectral analysis. The main window shows two panels of astronomical data. The top-left panel is a 2D image with a color scale from 0.00 to 0.03. The top-right panel is a Z-profile plot showing Value (Jy/beam) versus [LSRK] Frequency (GHz), with a color scale from -0.06 to 0.01. The bottom-left panel is another 2D image with a color scale from -0.00010 to 0.00004. The bottom-right panel is a statistics table for the active image.

WCS: (4:55:10.709, 30:21:56.14); Image: (388, 294);
Value: $-1.42631e-2$ Jy/beam ;
Frequency (LSRK): 230.5333 GHz;
Velocity: 6.0721 km/s; Polarization: [XY] Z R

Active
✓ 0: member.uid__A001_X133d_X19cd.GM_Aur_sci.spw31.cube.l.pbcor.fits
1: member.uid__A001_X133d_X19cd.GM_Aur_sci.spw37.cube.l.pbcor.fits
2: member.uid__A001_X1284_X172b.GM_Aurigae_sci.spw5_7_9_11.cont.l.tt0.pbcor.fits

Value (Jy/beam)
2.00e-3
0.00e+0
-2.00e-3
-4.00e-3
-6.00e-3
-8.00e-3

[LSRK] Frequency (GHz)
220.37 220.38 220.39 220.4 220.41 220.42

Data: (220.394186 GHz, $-2.38e-3$)

Image	Layers	Matching	Channel	Polarization
0 member.uid__A001_X133d_X19cd.GM_Aur_sci.spw31.cube.l.pbcor.fits	R	[XY] [Z] [R]	231	Stokes I
1 member.uid__A001_X133d_X19cd.GM_Aur_sci.spw37.cube.l.pbcor.fits	R	[XY] [Z] R	463	Stokes I
2 member.uid__A001_X1284_X172b.GM_Aurigae_sci.spw5_7_9_11.cont.l.tt0.pbcor.fits	R	[XY] R	0	Stokes I

Animator × Render Configuration × Region List ×

◀ First ◀ Prev ▶ Play ▶ Next ▶ Last → Mode Frame Rate 5

● Image 0 1 2 member.uid__A001_X133d_X19cd.GM_Aur_sci.spw37.cube.l.pbcor.fits

● Channel 0 239 463 717 956 LSRK 230.5333 GHz 6.0721 km/s

0 956

Spectra

Make 3 circular regions over disk and outflows -> look at region list

The screenshot displays the ALMA Science Archive interface. The main view shows three spectral images of a star, with three regions marked by white circles and black squares. The regions are labeled Region 1, Region 2, and Region 3. The Z-profile plot shows the value (Jy/beam) versus [LSRK] Frequency (GHz). The region list table is shown below the images.

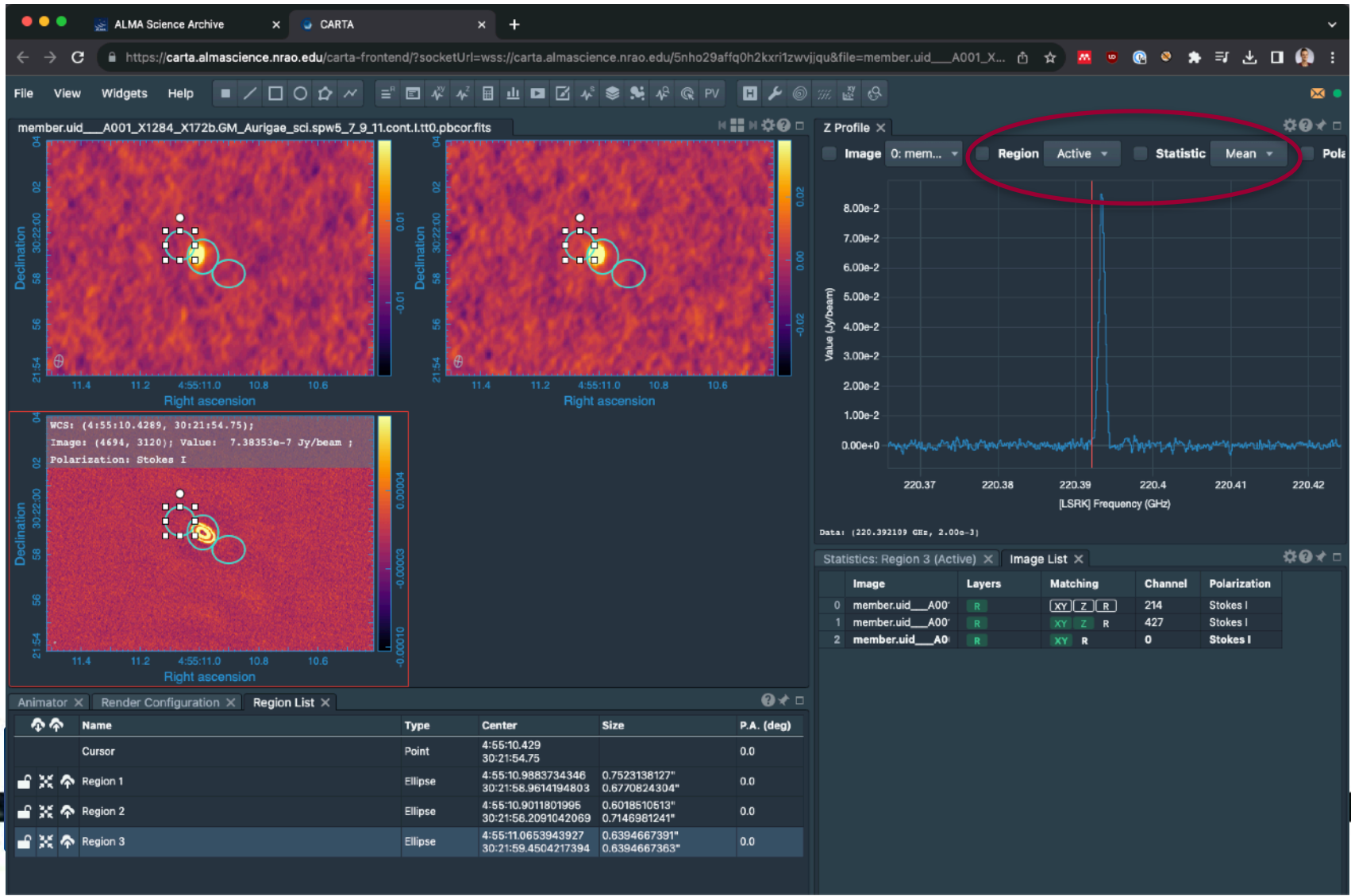
Name	Type	Center	Size	P.A. (deg)
Cursor	Point	4:55:10.429 30:21:54.75		0.0
Region 1	Ellipse	4:55:10.9883734346 30:21:58.9614194803	0.7523138127" 0.6770824304"	0.0
Region 2	Ellipse	4:55:10.9011801995 30:21:58.2091042069	0.6018510613" 0.7146981241"	0.0
Region 3	Ellipse	4:55:11.0653943927 30:21:59.4504217394	0.6394667391" 0.6394667363"	0.0

Statistics: Region 3 (Active) | Image List

Image	Layers	Matching	Channel	Polarization
0 member.uid__A00'	R	XY Z R	214	Stokes I
1 member.uid__A00'	R	XY Z R	427	Stokes I
2 member.uid__A0	R	XY R	0	Stokes I

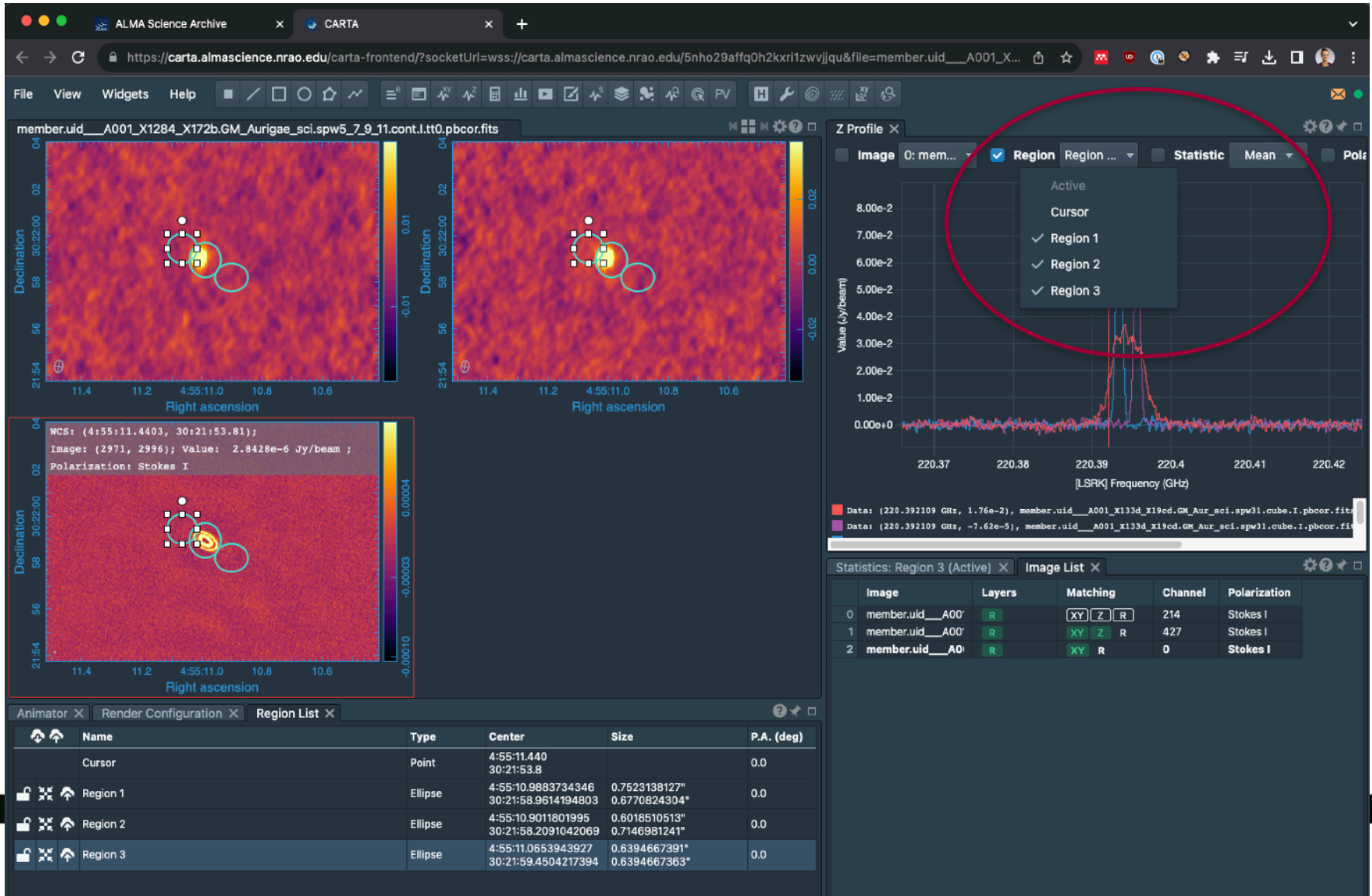
Spectra

Can plot different statistics for different regions



Spectra

Can plot different statistics for different regions at once -> see components.



Spectra

Can Zoom in

The screenshot displays the ALMA Science Archive CARTA interface. The main window shows three zoomed-in spectral images of a source, with the zoomed-in region highlighted by a red box in the top-left image. The zoomed-in image shows a spectral line with a value of -1.51468×10^{-6} Jy/beam. The Z Profile panel on the right shows the spectral line profile, with the zoomed-in region highlighted by a red box. The Z Profile panel also shows the data for the zoomed-in region, with a value of -7.62×10^{-5} Jy/beam. The Region List panel at the bottom shows the zoomed-in region (Region 3) with its center coordinates and size.

member.uid__A001_X1284_X172b.GM_Aurigae_sci.spw5_7_9_11.cont.l.tto.pbcor.fits

Decination 0.4 0.2 0 0.2 0.4
58 30:22:00
56
21:54

Right ascension 11.4 11.2 4:55:11.0 10.8 10.6

WCS: (4:55:10.5015, 30:22:03.137);
Image: (4570, 4223); Value: -1.51468×10^{-6} Jy/beam ;
Polarization: Stokes I

Decination 0.4 0.2 0 0.2 0.4
58 30:22:00
56
21:54

Right ascension 11.4 11.2 4:55:11.0 10.8 10.6

Z Profile

Image 0: mem... Region Region ... Statistic Mean Pol

Value (Jy/beam) 8.00e-2 7.00e-2 6.00e-2 5.00e-2 4.00e-2 3.00e-2 2.00e-2 1.00e-2 0.00e+0

[LSRK] Frequency (GHz) 220.388 220.39 220.392 220.394 220.396 220.398 220.4

Data: (220.392109 GHz, 1.76e-2), member.uid__A001_X133d_X19cd.GM_Aur_sci.spw31.cube.I.pbcor.fits
Data: (220.392109 GHz, -7.62e-5), member.uid__A001_X133d_X19cd.GM_Aur_sci.spw31.cube.I.pbcor.fits

Statistics: Region 3 (Active) Image List

Image	Layers	Matching	Channel	Polarization	
0	member.uid__A00'	R	XY Z R	214	Stokes I
1	member.uid__A00'	R	XY Z R	427	Stokes I
2	member.uid__A0'	R	XY R	0	Stokes I

Animator Render Configuration Region List

Name	Type	Center	Size	P.A. (deg)
Cursor	Point	4:55:10.502 30:22:03.14		0.0
Region 1	Ellipse	4:55:10.9883734346 30:21:58.9614194803	0.7523138127" 0.6770824304"	0.0
Region 2	Ellipse	4:55:10.9011801995 30:21:58.2091042069	0.6018510513" 0.7146981241"	0.0
Region 3	Ellipse	4:55:11.0653943927 30:21:59.4504217394	0.6394667391" 0.6394667363"	0.0

CARTA on your laptop

Open it up!



NGC 253 - has many transitions

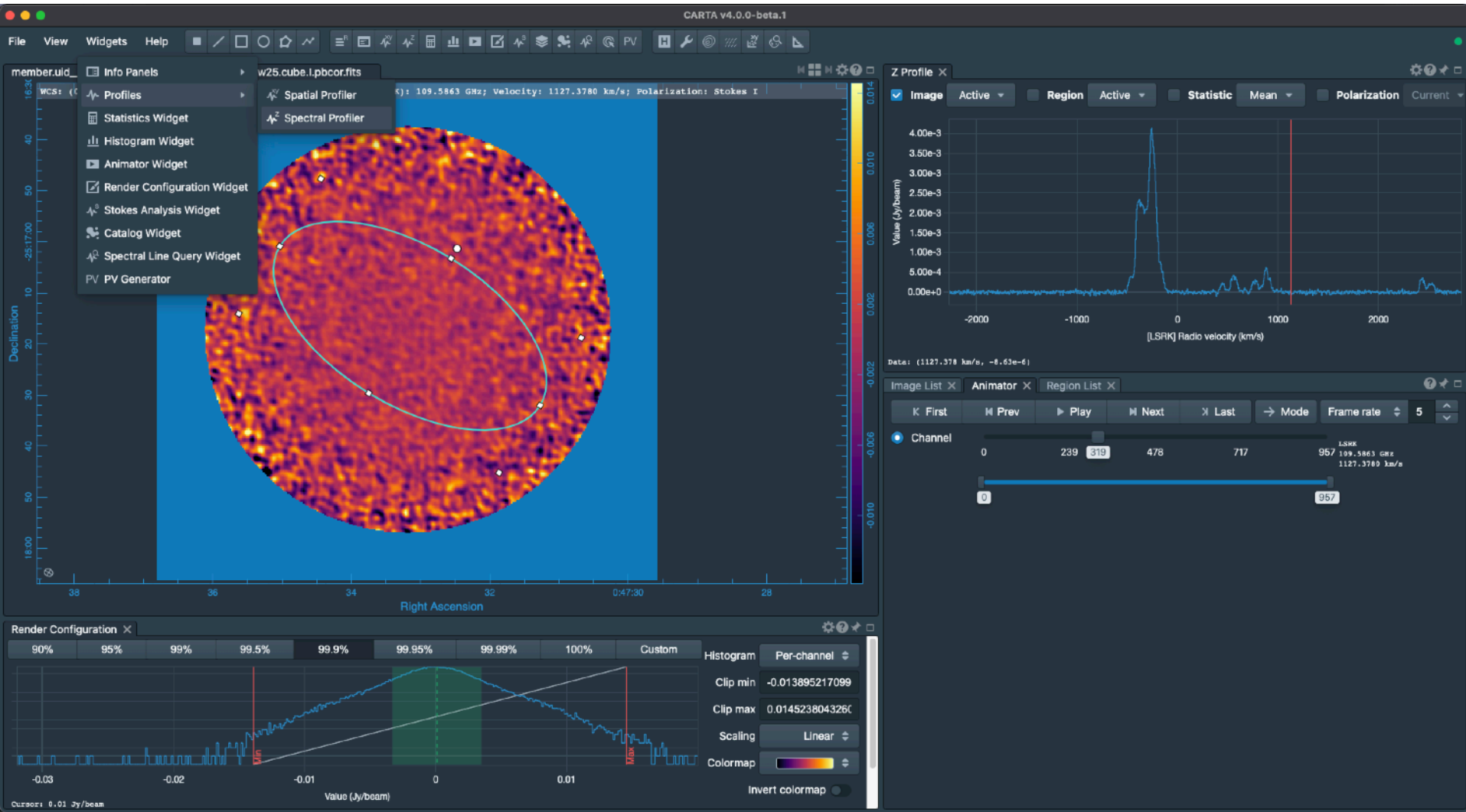


Sculptor Galaxy
Image: Wikipedia

NGC 253

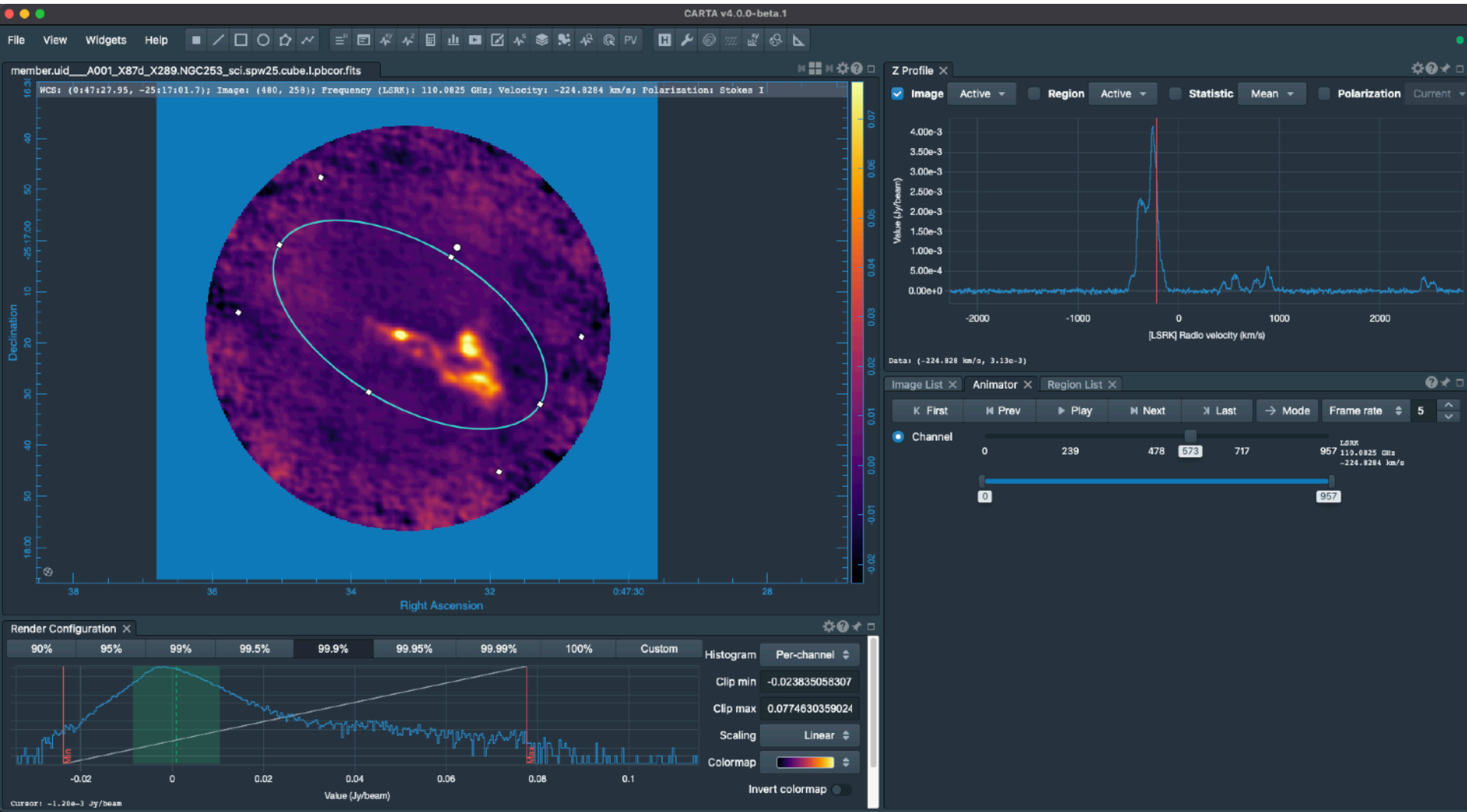
Draw region for whole galaxy

Widget -> Profiles -> Spectral (Z) -> lots of transitions



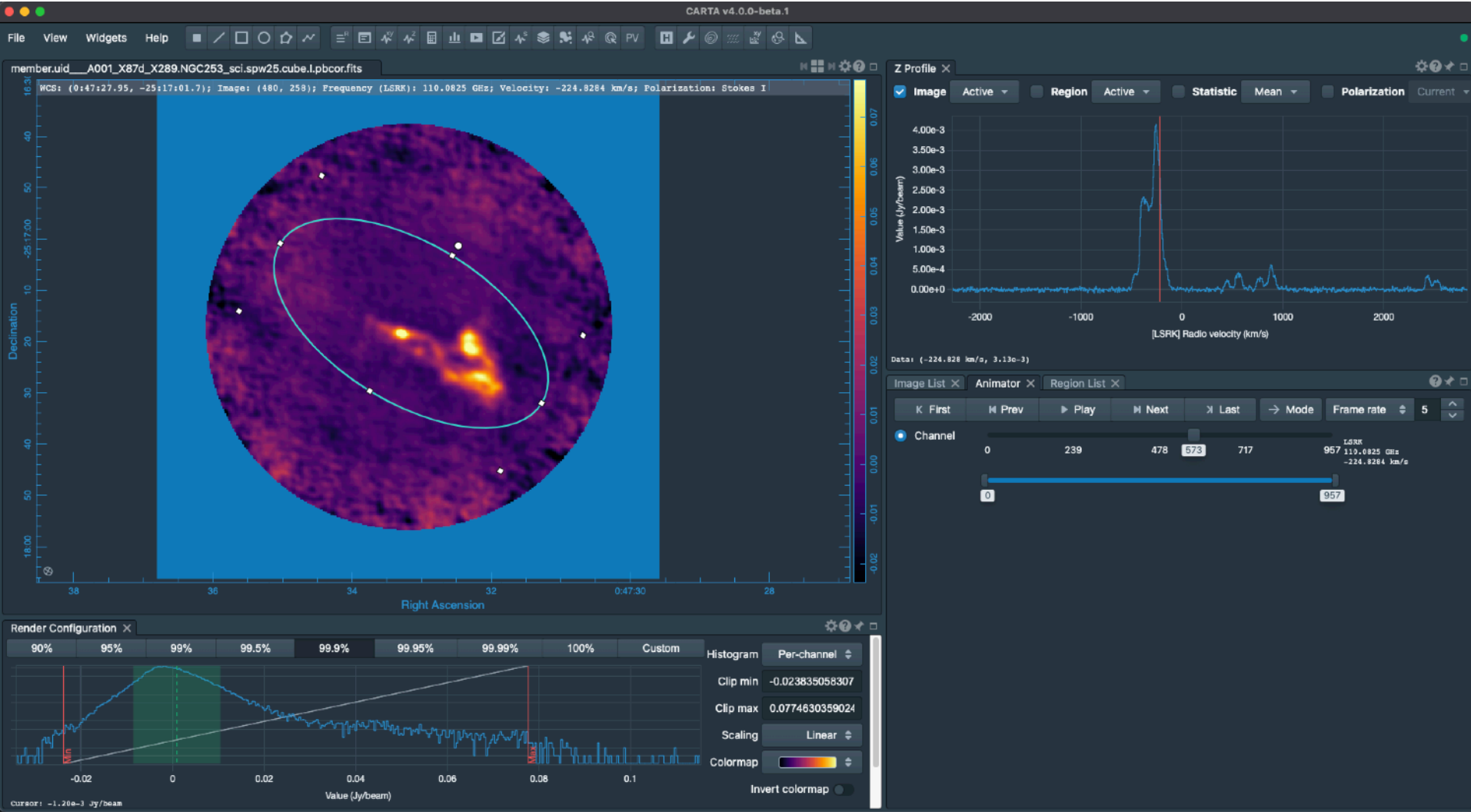
NGC 253

To animate can use red line or animator



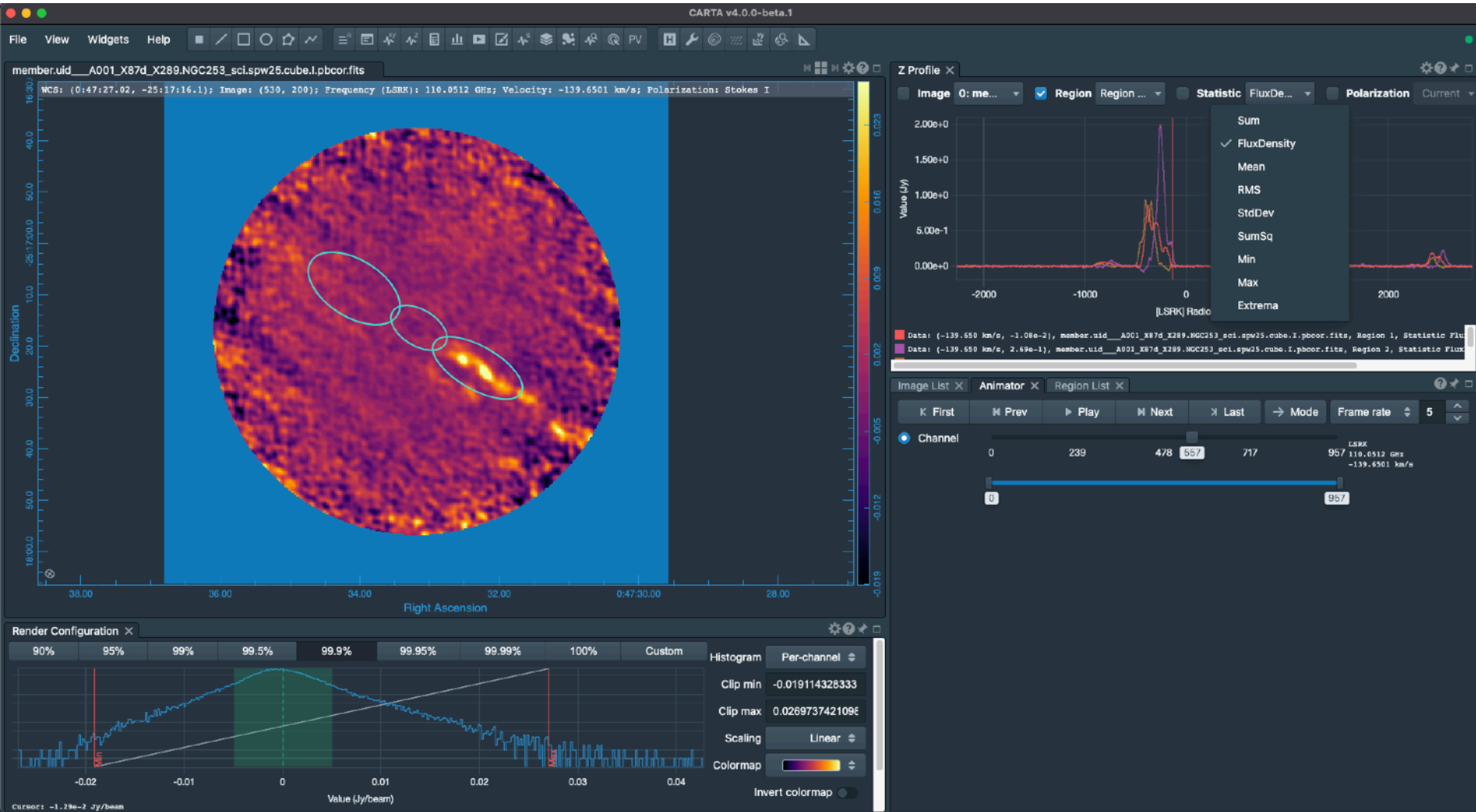
NGC 253

Note kinematics - velocity and components - some at -1000 km/s



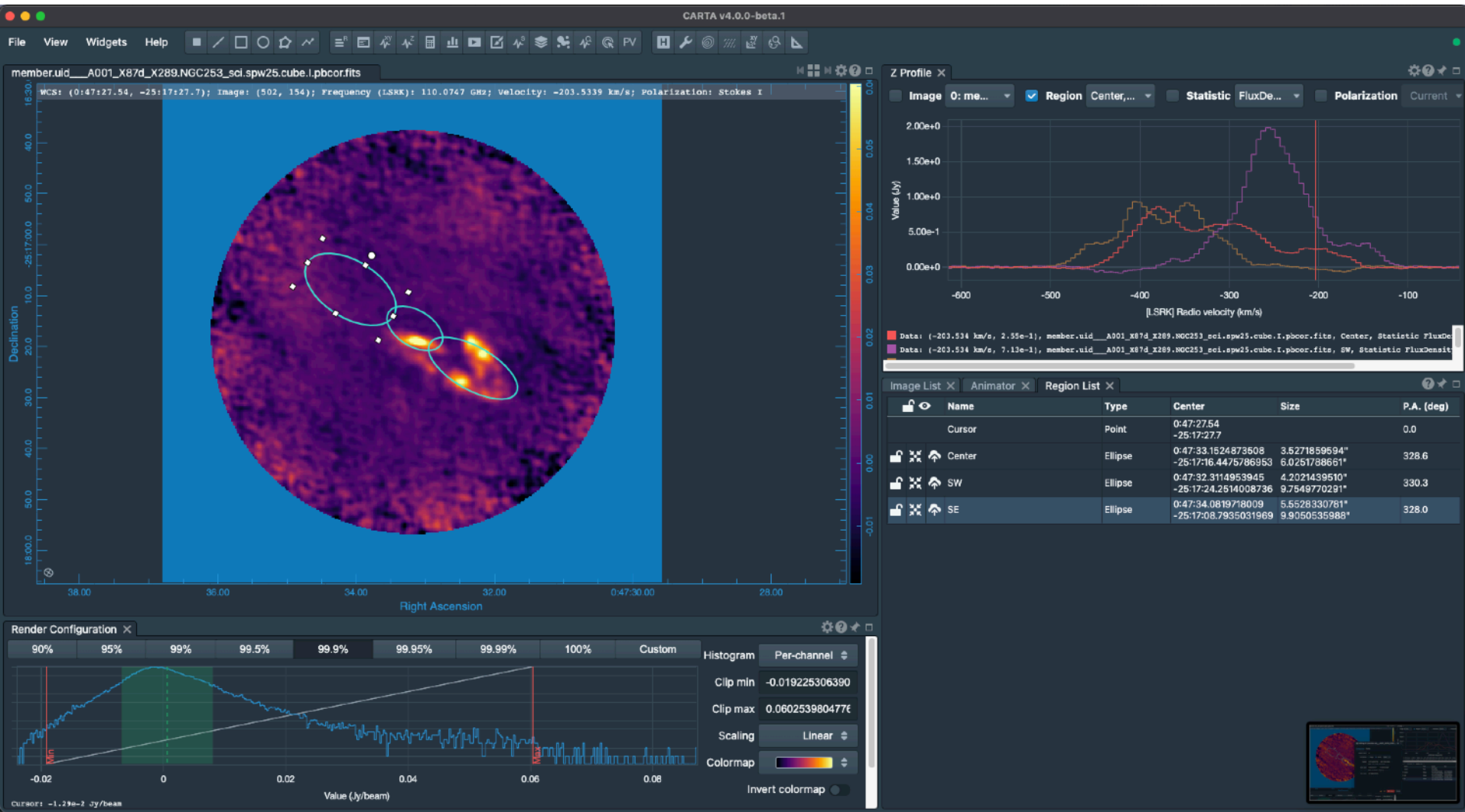
NGC 253

Make 3 regions and look at flux density statistic - zoom in



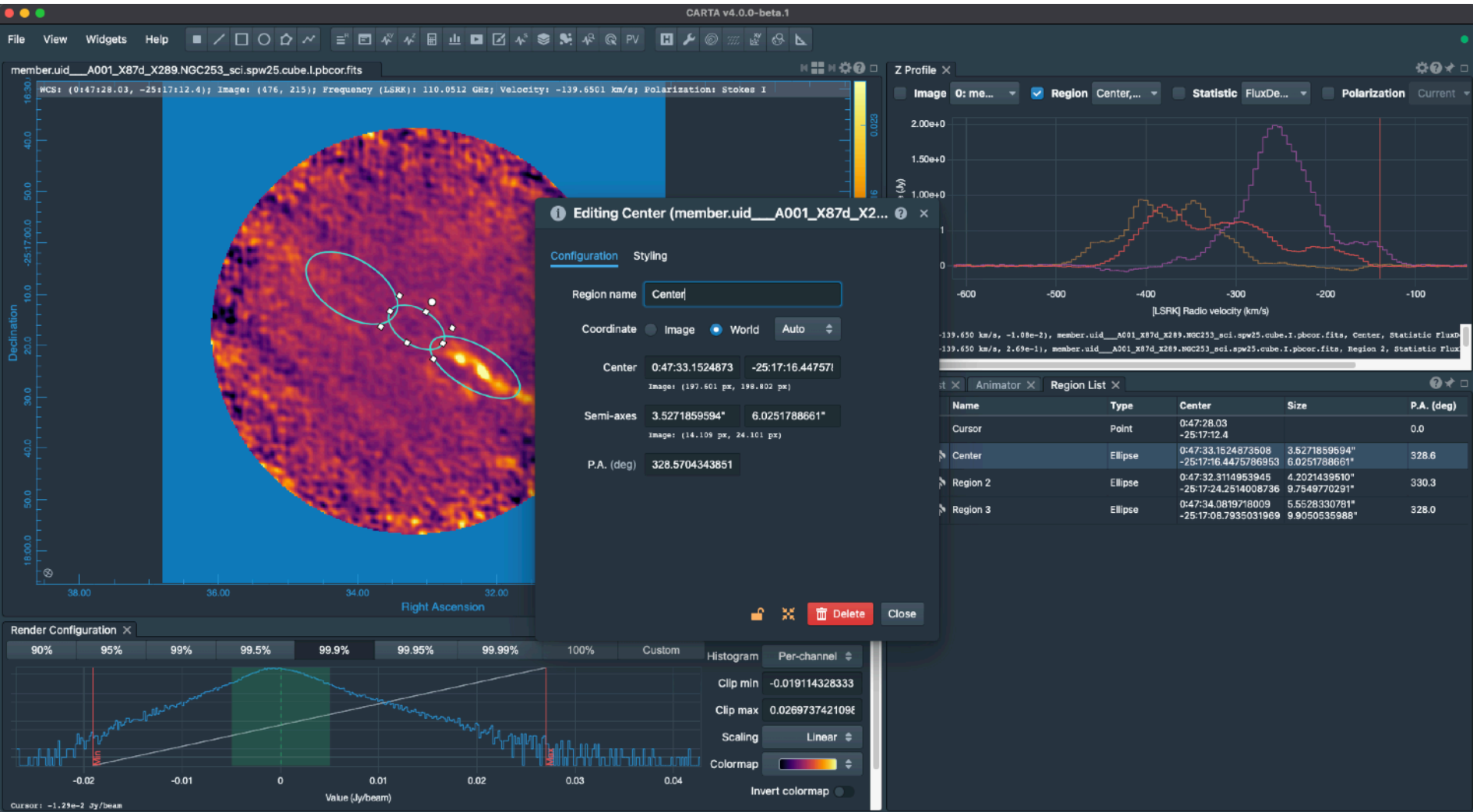
NGC 253

Name regions (double click)



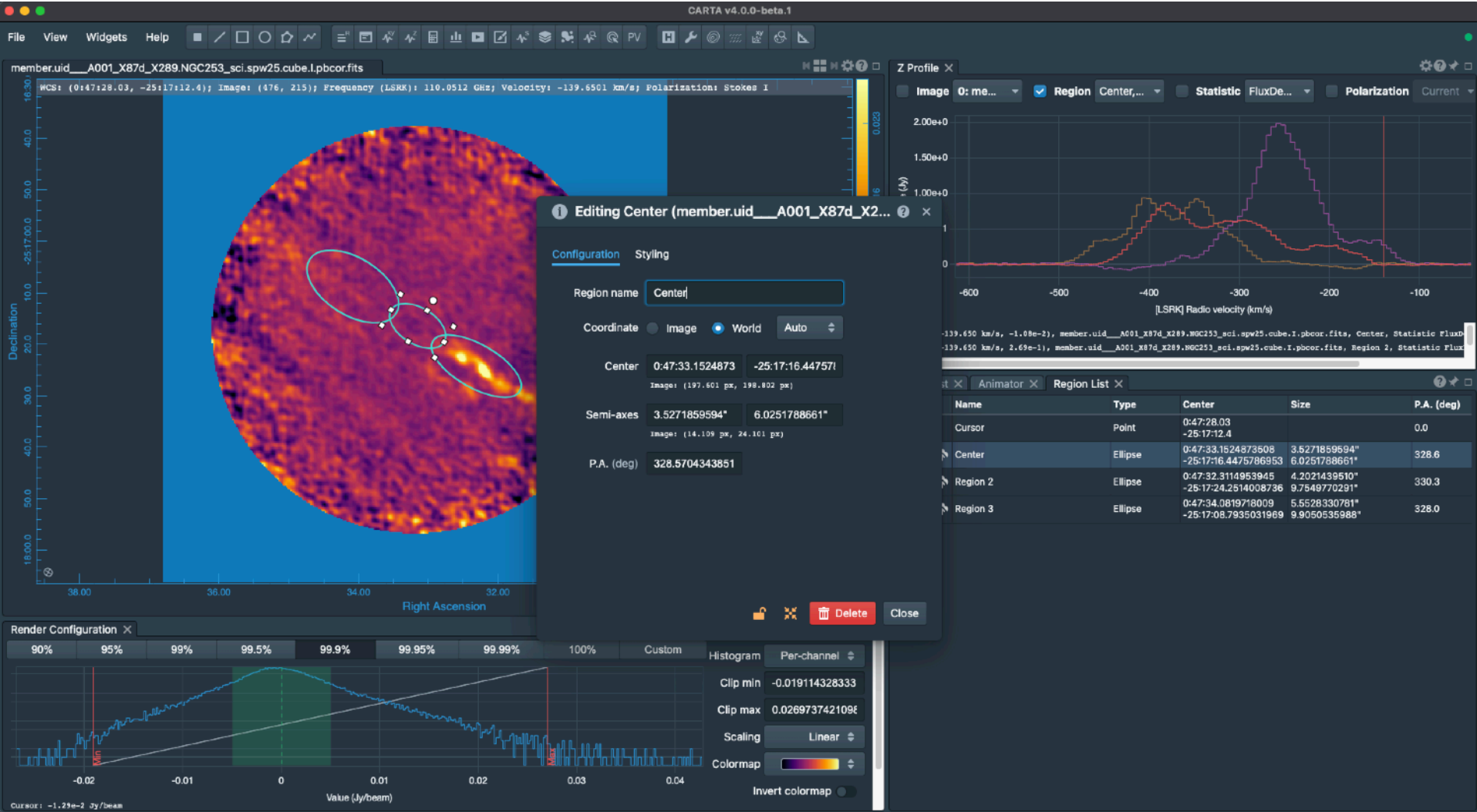
NGC 253

Zoom and Name region (double click)



NGC 253

Append the same image for each of the 5 transitions



Preferences

You can set your global preferences

The screenshot displays the CARTA v4.0.0-beta.1 interface. A 'Preferences' dialog box is open, showing the following settings:

- Theme: Automatic
- Enable code snippets:
- Auto-launch file browser:
- File list: Filter by file content
- Initial layout: Default
- Initial cursor position: Fixed Tracking
- Initial zoom level: Zoom to fit Zoom to 1.0x
- Zoom to: Cursor Current center

Buttons at the bottom of the dialog:

The background interface shows a radio astronomy data visualization. The main plot is a spectral plot with the following WCS information: WCS: (0:47:29.00, -25:16:45.5); Image: (423, 322); Frequency (LSRK): 110.0747 GHz; Velocity: -203.5339 km/s; Polarization: Stokes I. The plot shows a spectral line with a peak at approximately -200 km/s. The Z Profile plot shows a peak at approximately -200 km/s. The Render Configuration panel shows the following settings: 90%, 95%, 99%, 99.5%, 99.9%, 99.95%, 99.99%, 100%, Custom. Histogram: Per-channel. Clip min: -0.019225306390. Clip max: 0.0602539804776. Scaling: Linear. Colormap:

Type	Center	P.A. (deg)
Point	0:47:29.00 -25:16:45.5	0.0
Ellipse	0:47:33.1524873508 -25:17:16.4475786953	328.6
Ellipse	0:47:32.3114953945 -25:17:24.2514008736	330.3
Ellipse	0:47:34.0819718009 -25:17:08.7935031969	328.0

NGC 253

You can make moment maps.

member.uid__A001_X87d_X289.NGC253_sci.spw25.cube.l.pbcor.fits

WCS: (0:47:30.78, -25:16:49.1); Image: (326, 308); NaN; Frequency (LSRK): 110.0747 GHz; Velocity: -203.5339 km/s; Polarization: Stokes I

Declination

16.40

50

-25:17:00

10

20

30

40

50

37

36

29

0.04

0.02

0.00

Value (Jy/beam)

Cursor: -1.29e-2 Jy/beam

Value (Jy/beam)

0.02

0.04

0.06

0.08

Colormap

Linear

Per-channel

-0.019225306390

0.0602539804776

Generate

Keep previous moment image(s)

0 x

0 x

None

Range (Jy/beam) From 0 To 1

Mask

Range (km/s) From -2269.10 To 2825.621

System LSRK

Coordinate Radio velocity (km/s)

Region (SE) Active

Image (0: memb...) 0: member.uic

Conversion Styling Smoothing Moments Fitting

Z Profile Settings: Cursor

Z Profile

Image 0: me... Region Center, ... Statistic FluxDe...

Value (Jy)

8.00e-1

6.00e-1

4.00e-1

2.00e-1

0.00e+0

-600

-500

-400

-300

-200

-100

[LSRK] Radio velocity (km/s)

Data: (-203.534 km/s, 2.55e-1), member.uid__A001_X87d_X289.NGC253_sci.spw25.cube.l.pboo

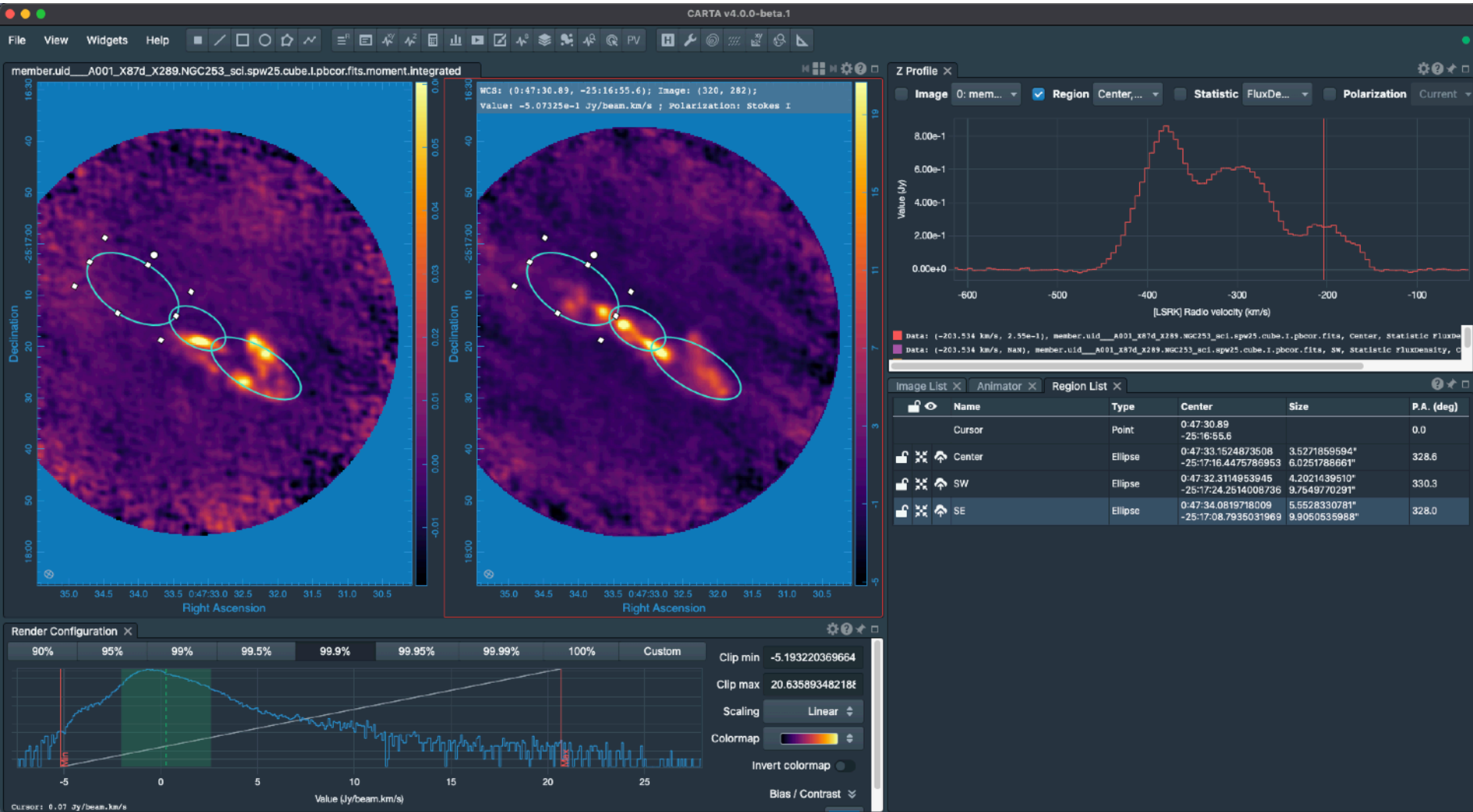
Data: (-203.534 km/s, NaN), member.uid__A001_X87d_X289.NGC253_sci.spw25.cube.l.pbcor.fi

Image List Animator Region List

Name	Type	Center	P.A. (deg)
Cursor	Point	0:47:30.78 -25:16:49.1	0.0
Center	Ellipse	0:47:33.1524873508 -25:17:16.4475786953	328.6
SW	Ellipse	0:47:32.3114953945 -25:17:24.2514008736	330.3
SE	Ellipse	0:47:34.0819718009 -25:17:08.7935031969	328.0

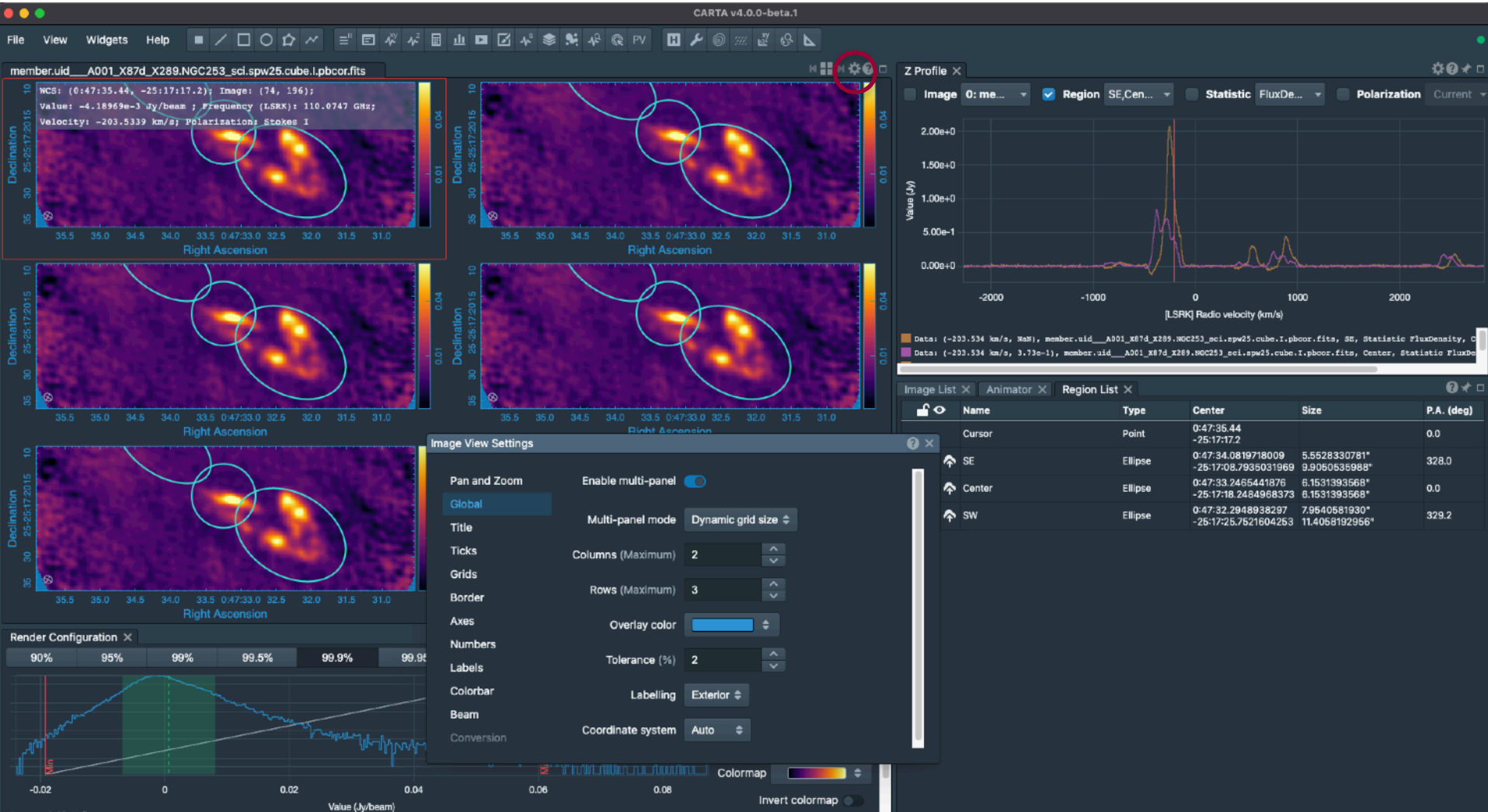
NGC 253

You can make moment maps.



NGC 253

Append 4 more copies of the same image and set image grid size



NGC 253

Set rest frequencies for each image to transitions of interest: HC3N (109.1736), 12C18O (109.7822), HNCO (109.90575), 13CO (1-0) (110.2014), CH3CN65? (110.3813)

The screenshot displays the CARTA v4.0.0-beta.1 software interface. The main window shows a spectral line image of NGC 253 with several regions of interest outlined in cyan. The 'Rest Frequency' panel is open, showing settings for five different sources. The 'Z Profile' plot shows the flux density (Jy) versus [LSRK] Radio velocity (km/s) for the selected regions. The 'Image List' table at the bottom right shows the list of images and their properties.

Image	Layers	Matching	Channel	Polarization
0: member.uid__A001_X87d_X289.NGC253_scl.spw25.cube.l.pbcor.fits	R	XY Z R	569	Stokes I
1: member.uid__A001_X87d_X289.NGC253_scl.spw25.cube.l.pbcor.fits	R	XY Z R	883	Stokes I
2: member.uid__A001_X87d_X289.NGC253_scl.spw25.cube.l.pbcor.fits	R	XY Z R	947	Stokes I
3: member.uid__A001_X87d_X289.NGC253_scl.spw25.cube.l.pbcor.fits	R	XY Z R	957	Stokes I
4: member.uid__A001_X87d_X289.NGC253_scl.spw25.cube.l.pbcor.fits	R	XY Z R	957	Stokes I

Rest Frequency Settings:

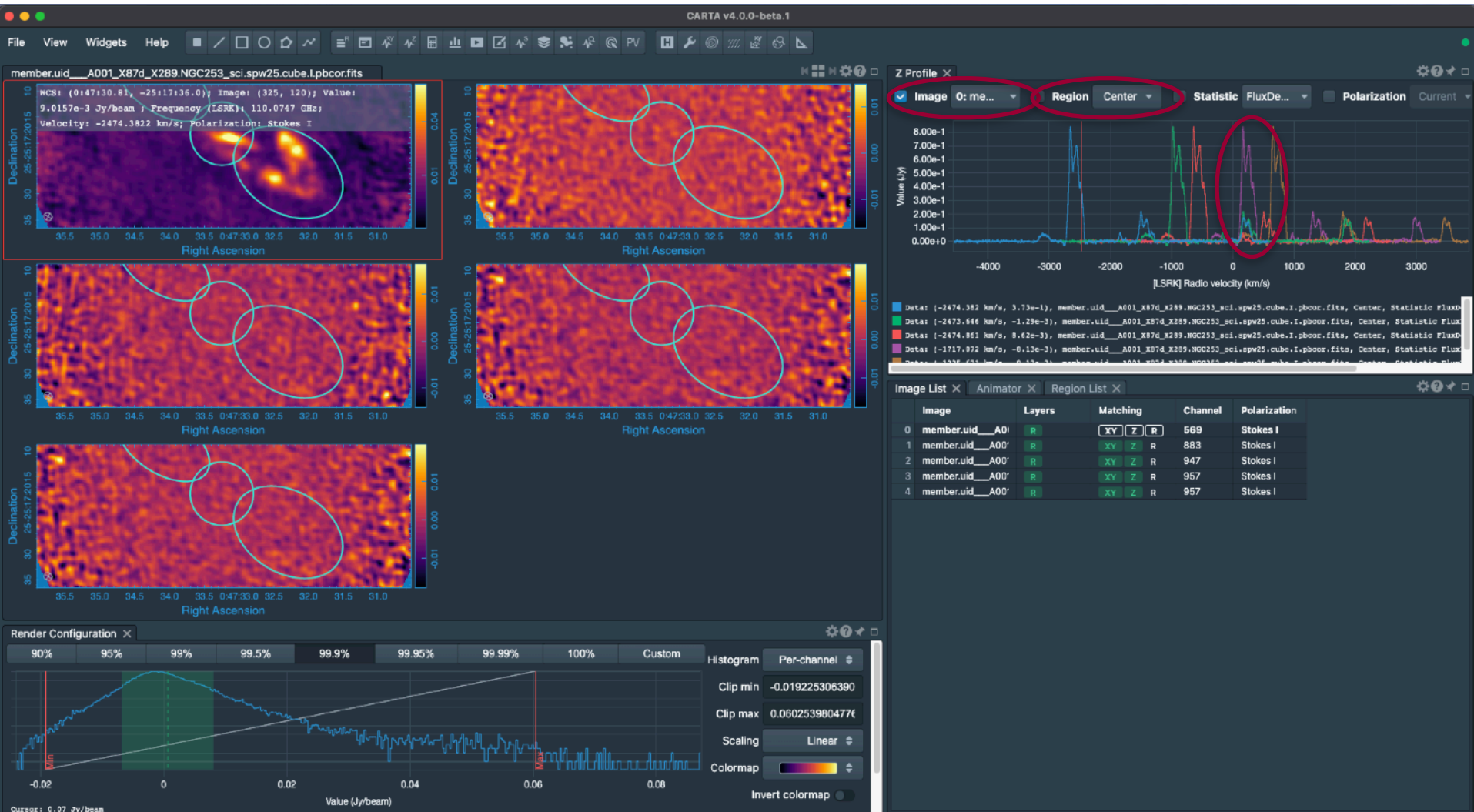
- Source 0: member.uid__A001_X87d_X289.NGC253_scl.spw25.cube.l.pbcor.fits (Active)
Rest frequency: 109.1736 GHz
- Source 1: member.uid__A001_X87d_X289.NGC253_scl.spw25.cube.l.pbcor.fits
Rest frequency: 109.7822 GHz
- Source 2: member.uid__A001_X87d_X289.NGC253_scl.spw25.cube.l.pbcor.fits
Rest frequency: 109.90575 GHz
- Source 3: member.uid__A001_X87d_X289.NGC253_scl.spw25.cube.l.pbcor.fits
Rest frequency: 110.2014 GHz
- Source 4: member.uid__A001_X87d_X289.NGC253_scl.spw25.cube.l.pbcor.fits
Rest frequency: 110.3813 GHz

Z Profile: Value (Jy) vs [LSRK] Radio velocity (km/s). The plot shows a prominent peak at approximately -2500 km/s.

Image List: The table below shows the list of images and their properties.

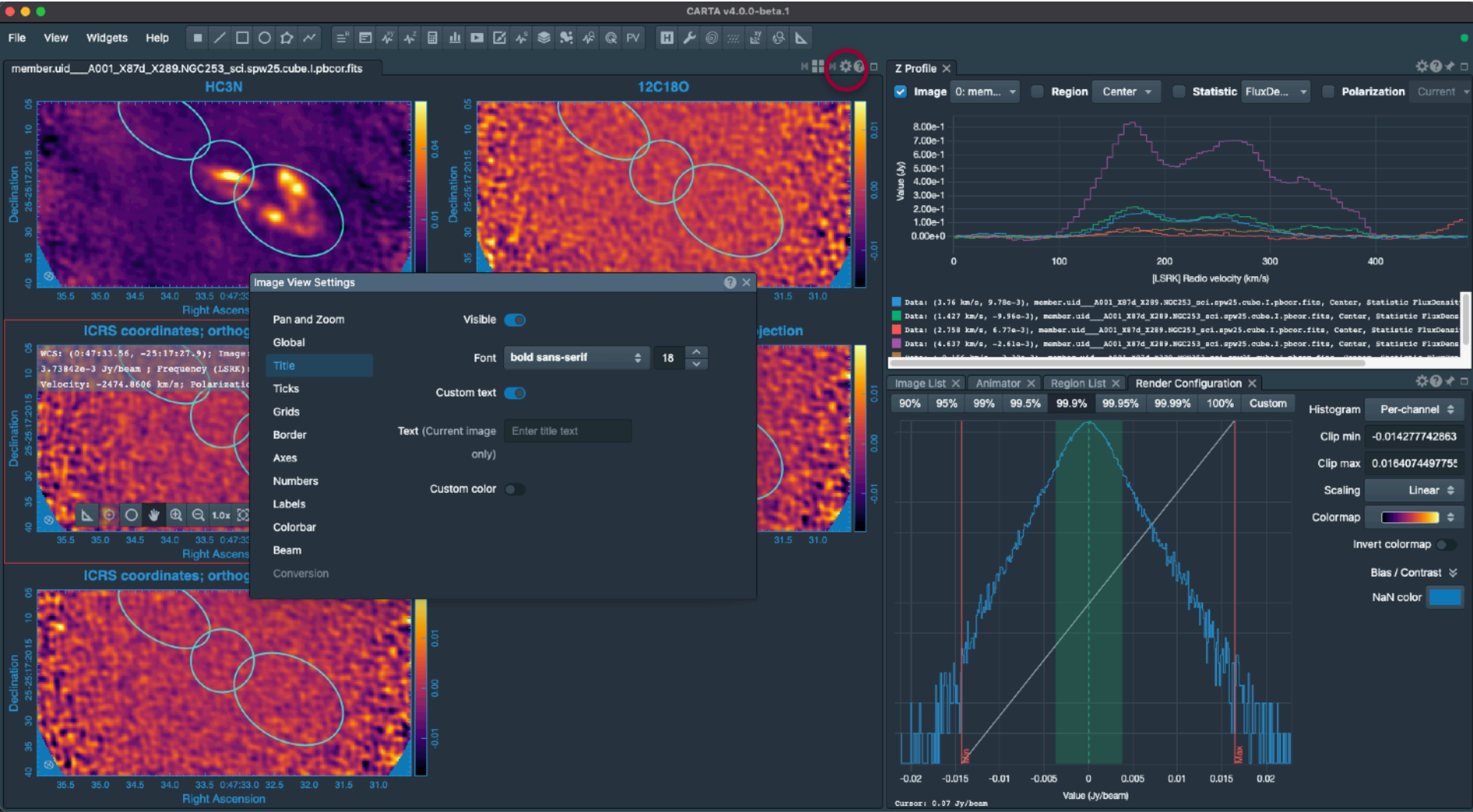
NGC 253

Update to include all images and can change region - zoom in to where all 5 lines overlap.



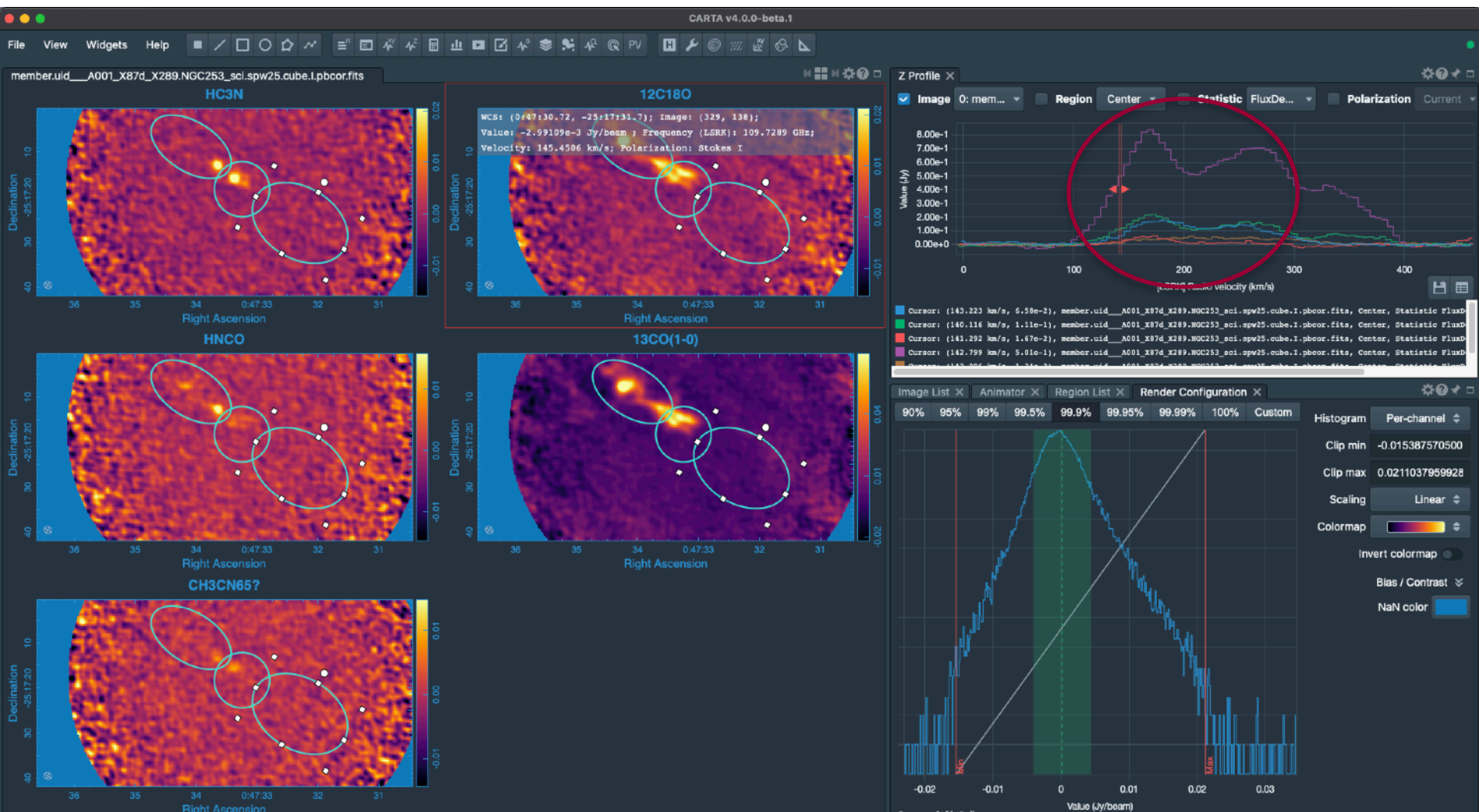
NGC 253

Set titles



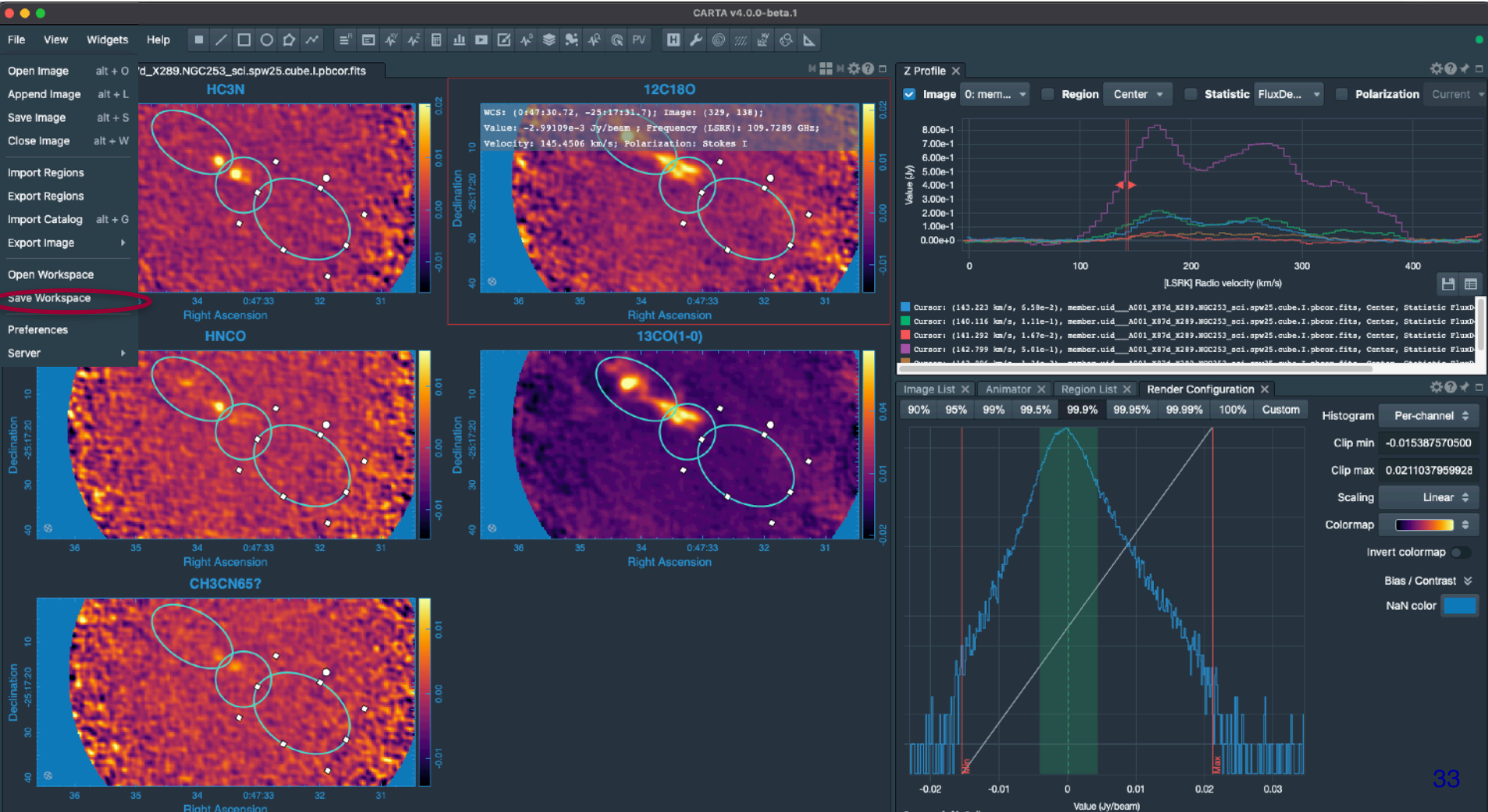
NGC 253

Animate (step through line) - walking through the 5 transitions all at once



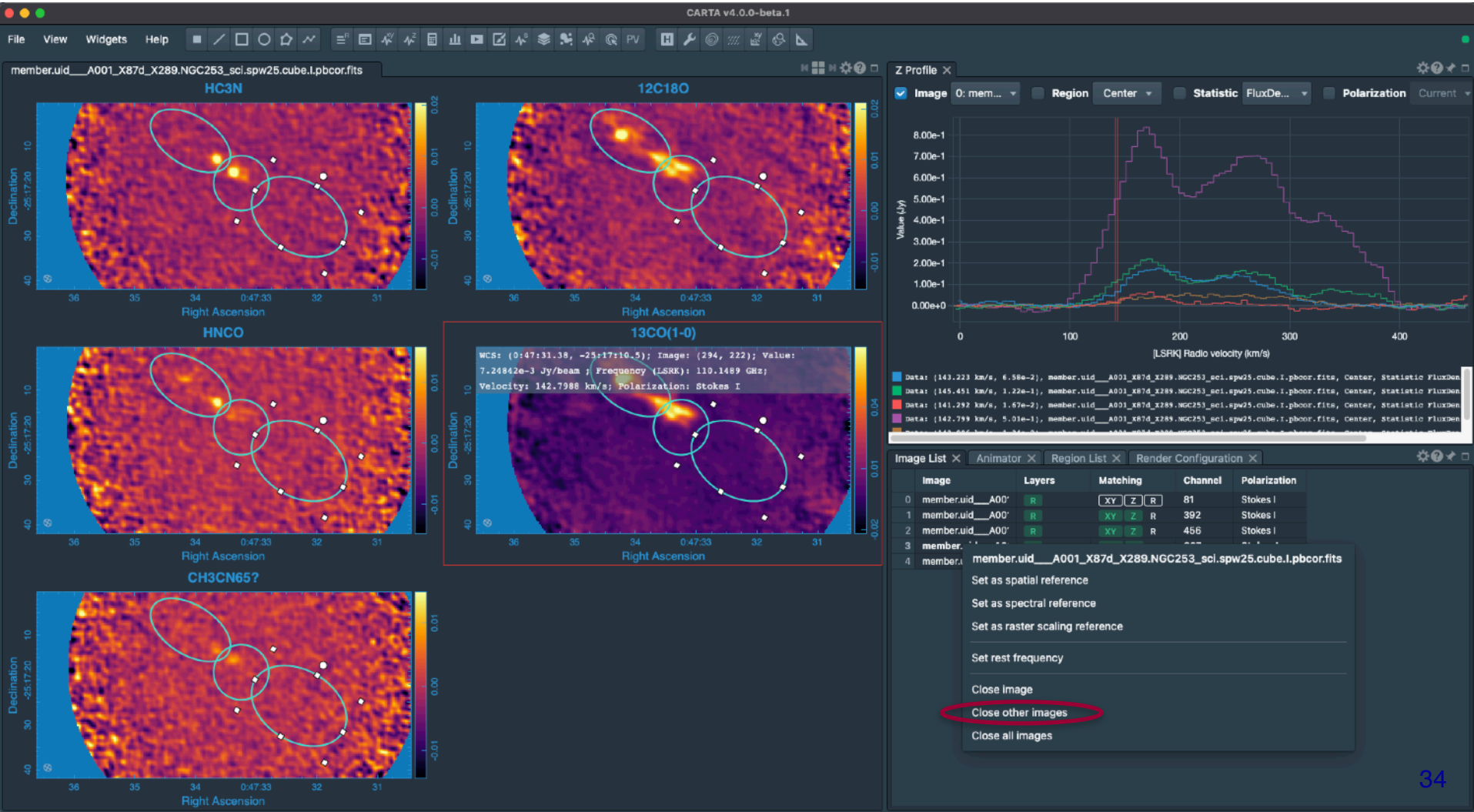
NGC 253

Save/open workspace - doesn't save everything but saves some stuff



NGC 253

PV Diagram - close all images but 13CO(1-0) by right click on image in image list



NGC 253

PV Diagram (might have to close and reopen image if not cooperating) - remove other regions and draw line region - click on PV diagram and set parameters: PV cut (region 1 - the line), Avg width (20), Coordinate (radio velocity), Range (50-450)

The screenshot displays the CARTA v4.0.0-beta.1 software interface. The main window shows a radio image of NGC 253 with a line region drawn across it. The axes are labeled 'Right Ascension' and 'Declination'. A 'PV Preview Viewer' window is open, showing a plot of '[LSRK] Radio velocity (km/s)' versus 'OFFSET (arcsec)'. The plot shows a bright central peak. The 'PV Generator' panel is also open, with the following settings:

- Image (0: member.uid_...): 0: member.uid__A001_X87d_X2
- PV cut (Region 1): Region 1
- Average width: 20
- Coordinate: Radio velocity (km/s)
- System: LSRK
- Range (km/s): From 50 To 450
- Axis order: X-axis: Spatial, Y-axis: Spectral
- Keep previous PV image(s):
- Preview region: Image
- Preview rebin (px): XY 1 Z 1
- Preview cube size (MB): 45.48

The 'Start Preview' button is circled in red. Below the PV Generator panel, the text 'No stats data' and 'Select a valid region from the dropdown' is visible. The bottom of the interface shows a table with columns for Image, Layers, Matching, Channel, and Polarization.

Image	Layers	Matching	Channel	Polarization
0	member.uid__A001_X87d_X2	<input type="checkbox"/> XY <input type="checkbox"/> Z <input type="checkbox"/> R	448	Stokes I

NGC 253

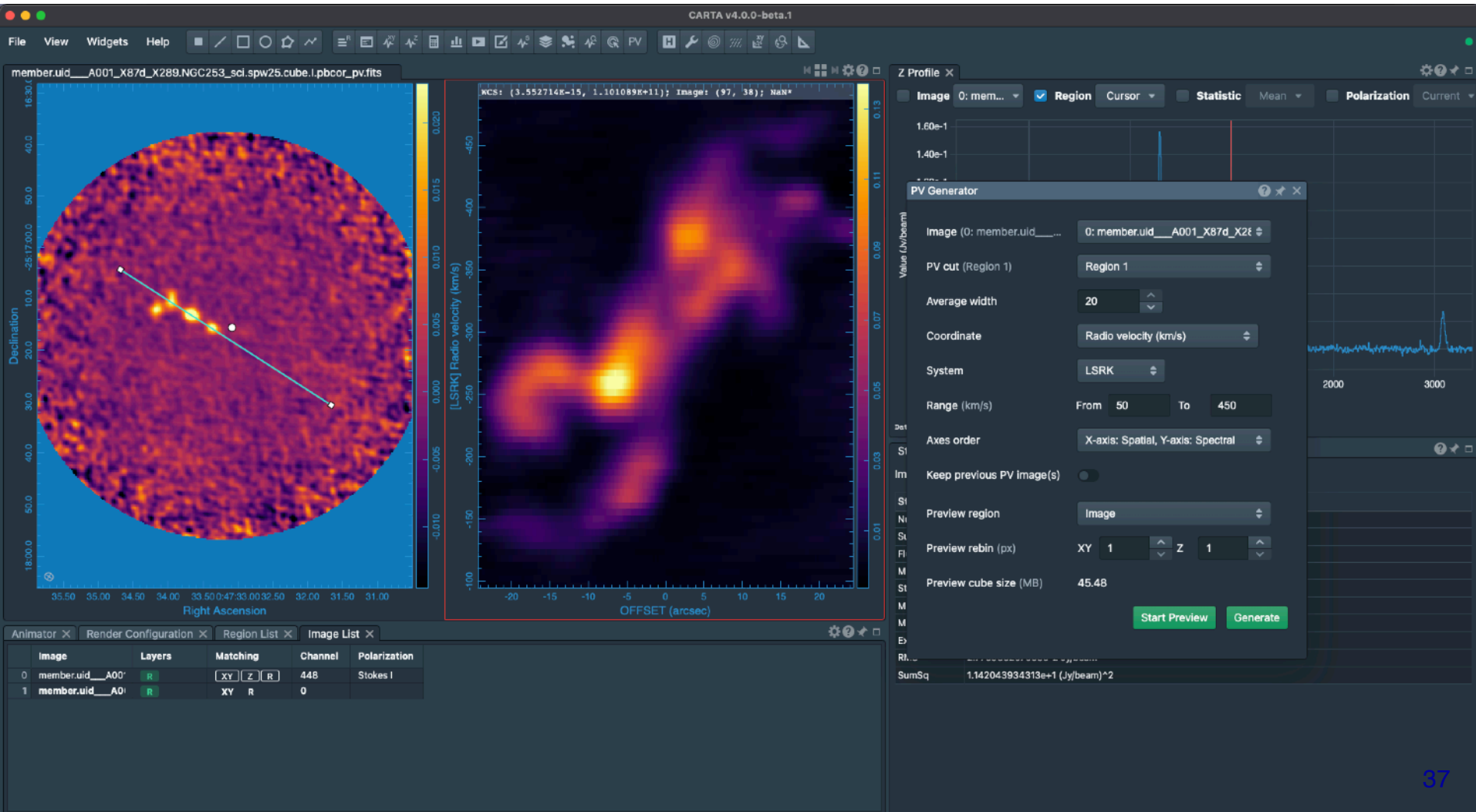
PV Diagram - can drag around line and get PV diagram to go over features you want - then generate

The screenshot displays the CARTA v4.0.0-beta.1 software interface. The main window shows a radio image of NGC 253 with a circular region of interest. A 'PV Preview Viewer' window is open, showing a PV diagram with the following WCS information: $(19.19943, -441.0639)$; Image: (174, 65); Value: $-2.81429e-3$ Jy/beam. The PV diagram plots [LSRK] Radio velocity (km/s) on the y-axis (from -450 to -150) against OFFSET (arcsec) on the x-axis (from -20 to 20). The 'PV Generator' panel is also visible, with the following settings: Image (0: member.uid___A001_X87d_X2), PV cut (Region 1), Average width (20), Coordinate (Radio velocity (km/s)), System (LSRK), Range (km/s) (From 50 To 450), Axes order (X-axis: Spatial, Y-axis: Spectral), Keep previous PV image(s) (off), Preview region (Image), Preview rebin (px) (XY 1 Z 1), and Preview cube size (MB) (45.48). The 'Generate' button is circled in red. A 'Z Profile' window shows a spectral plot, and an 'Image List' window at the bottom shows the current image settings.

Image	Layers	Matching	Channel	Polarization
0	member.uid___A001_X87d_X2	XY Z R	448	Stokes I

NGC 253

PV Diagram - can drag around line and get PV diagram to go over features you want - then generate



NGC 253

Save sub cube fits files

CARTA v4.0.0-beta.1

File View Widgets Help

Open Image alt + O d_X289.NGC253_sci.spw25.cube.l.pbcor.fits
Append Image alt + L -25:16:37.7); Image: (275, 354); NaN ;
109.8383 GHz; Velocity: 987.7118 km/s;
Save Image alt + S
Close Image alt + W
Import Regions
Export Regions
Import Catalog alt + G
Export Image
Open Workspace
Save Workspace
Preferences
Server

Right Ascension
OFFSET (arcsec)

[LSRK] Radio velocity (km/s)

Z Profile X

Image 0: me... Region Cursor Statistic Mean Polarization Current

Data: (987.712 km/s, NaN)

Statistics: Image X

Image Active Region Active Polarization Current

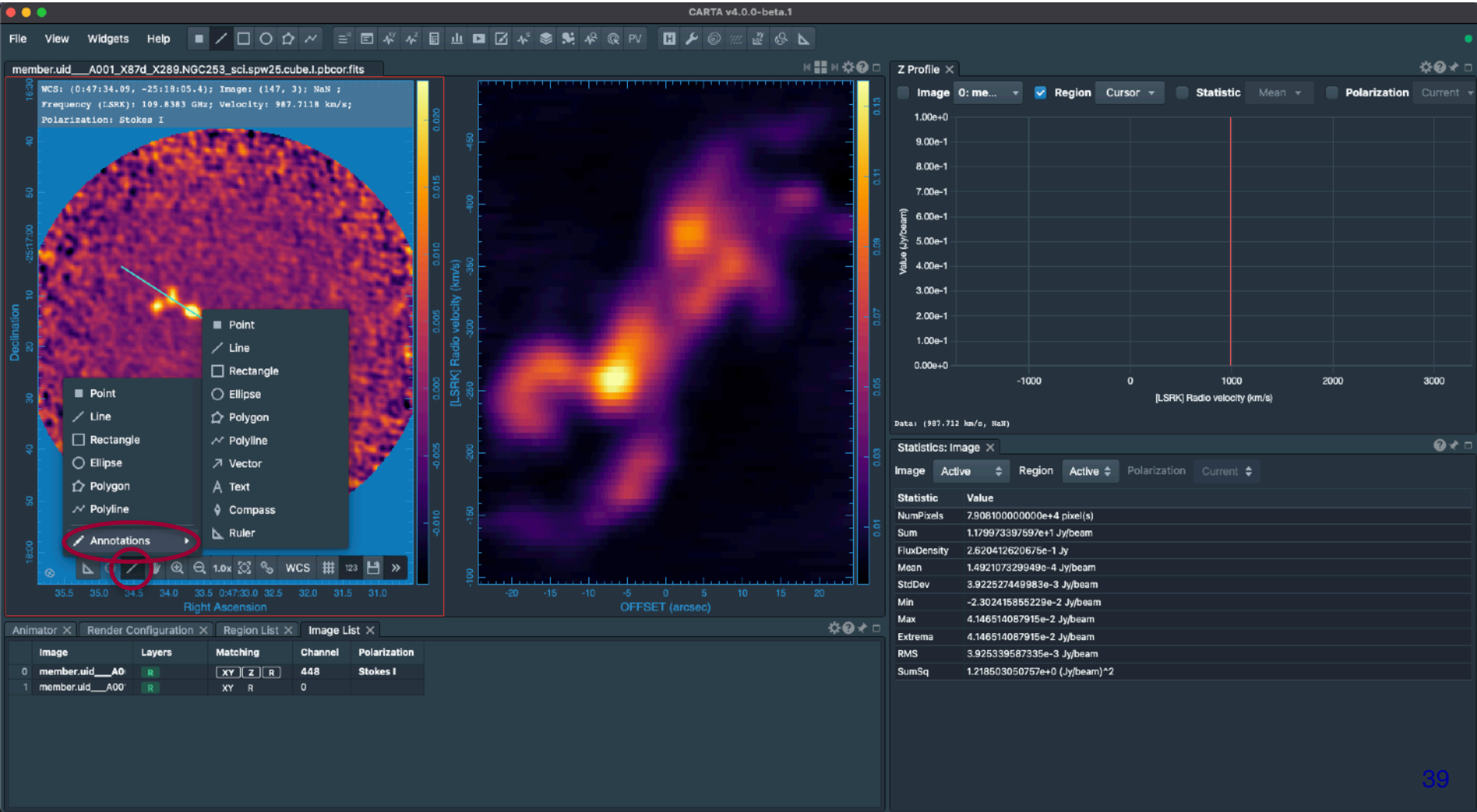
Statistic	Value
NumPixels	7.908100000000e+4 pixel(s)
Sum	1.179973397597e+1 Jy/beam
FluxDensity	2.620412620675e-1 Jy
Mean	1.492107329949e-4 Jy/beam
StdDev	3.922527449983e-3 Jy/beam
Min	-2.302415855229e-2 Jy/beam
Max	4.146514087915e-2 Jy/beam
Extrema	4.146514087915e-2 Jy/beam
RMS	3.925339587335e-3 Jy/beam
SumSq	1.218503050757e+0 (Jy/beam)^2

Animator X Render Configuration X Region List X Image List X

Image	Layers	Matching	Channel	Polarization
0	member.uid__A0	XY Z R	448	Stokes I
1	member.uid__A00	XY R	0	

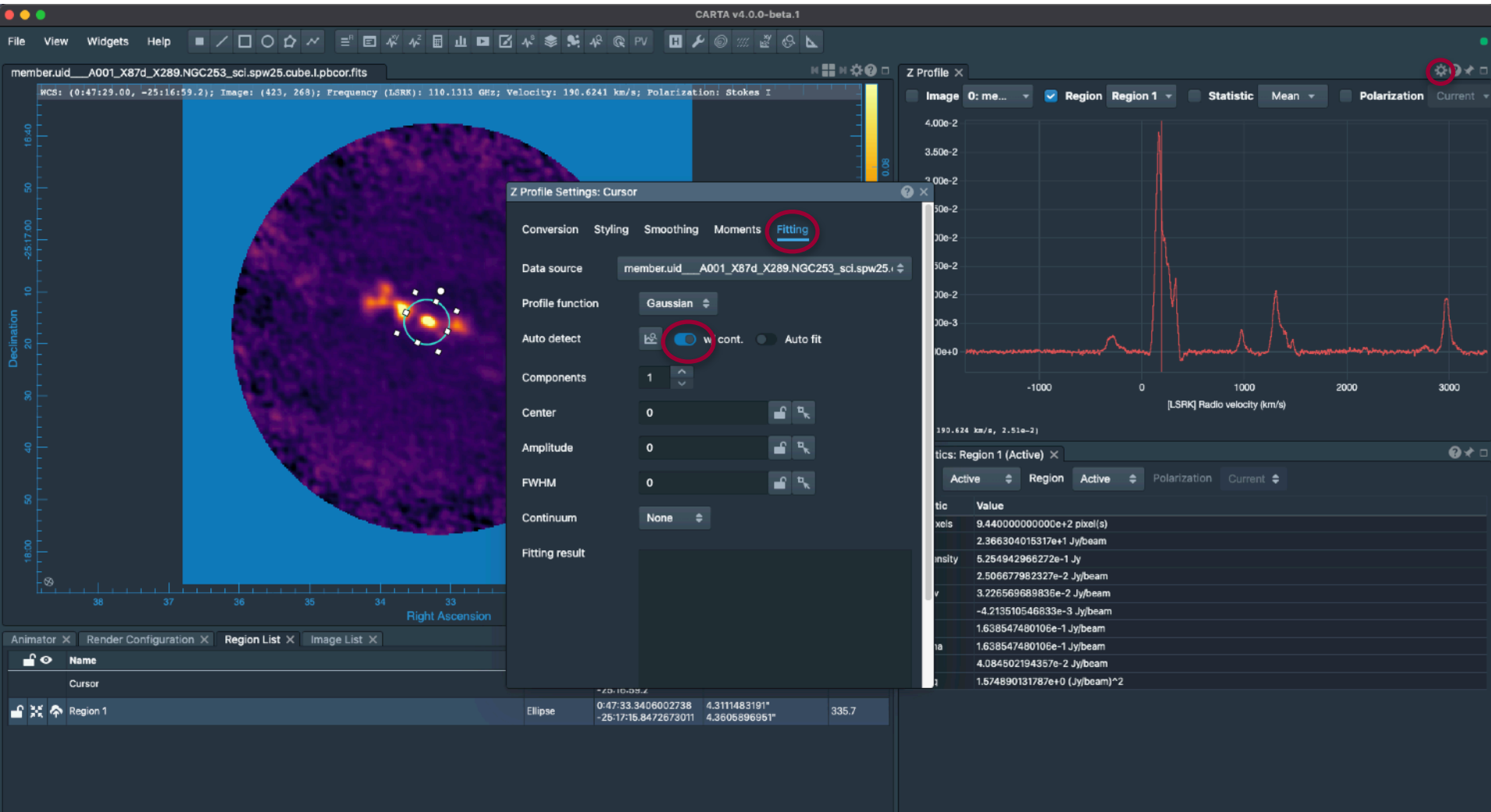
NGC 253

Annotations



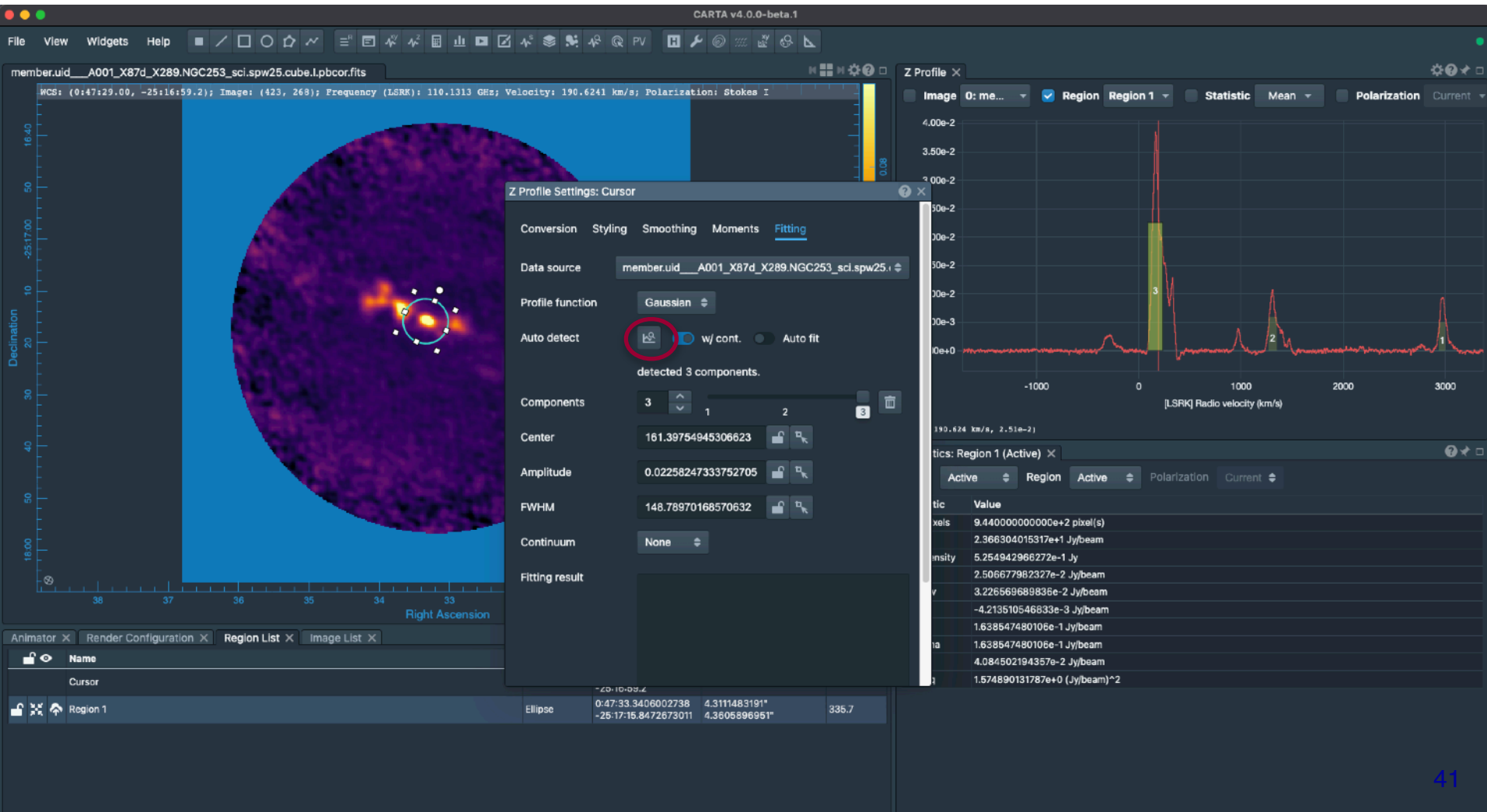
NGC 253

Line Fitting (might have to play with region and clicking to show plot of region)



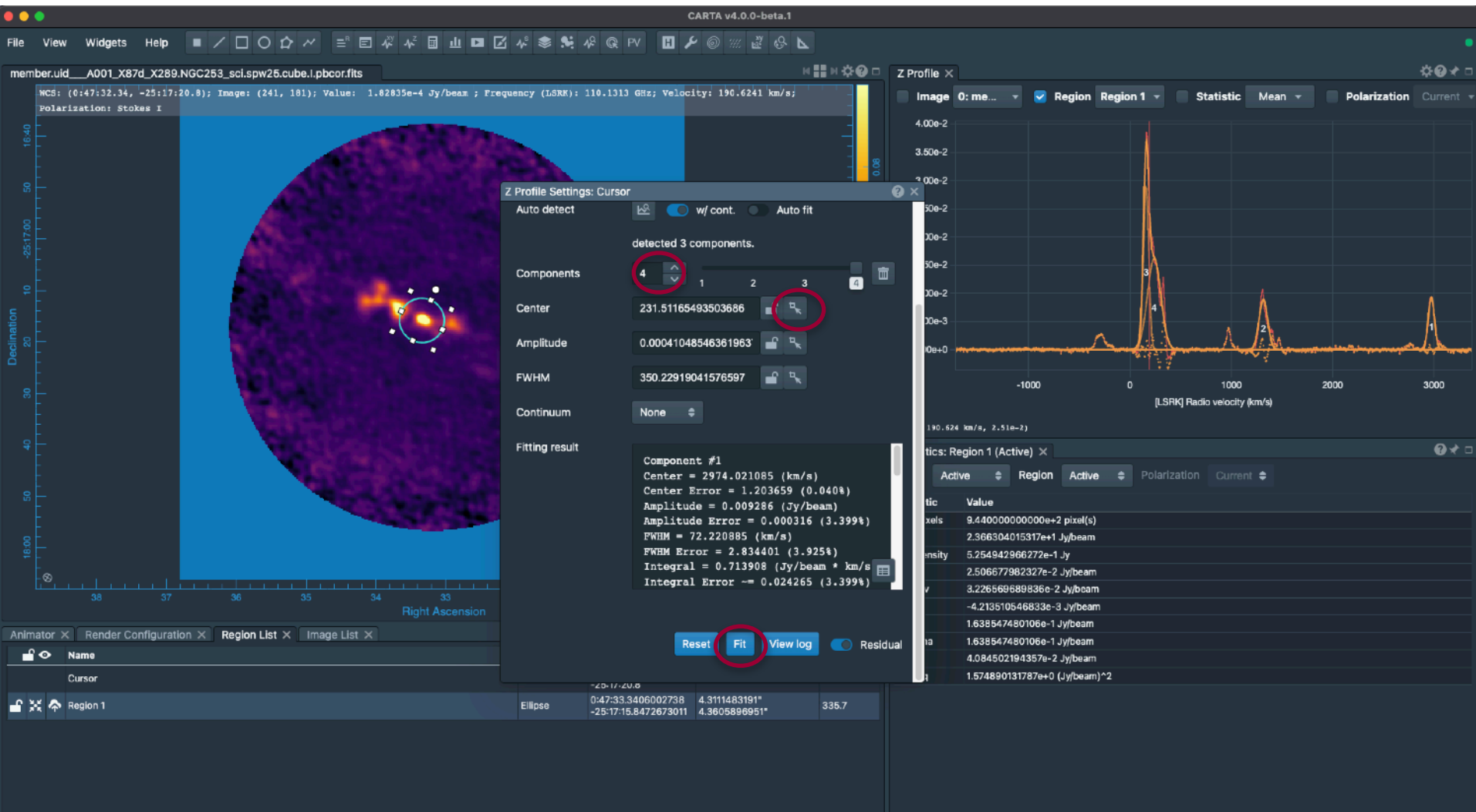
NGC 253

Line Fitting - auto generate



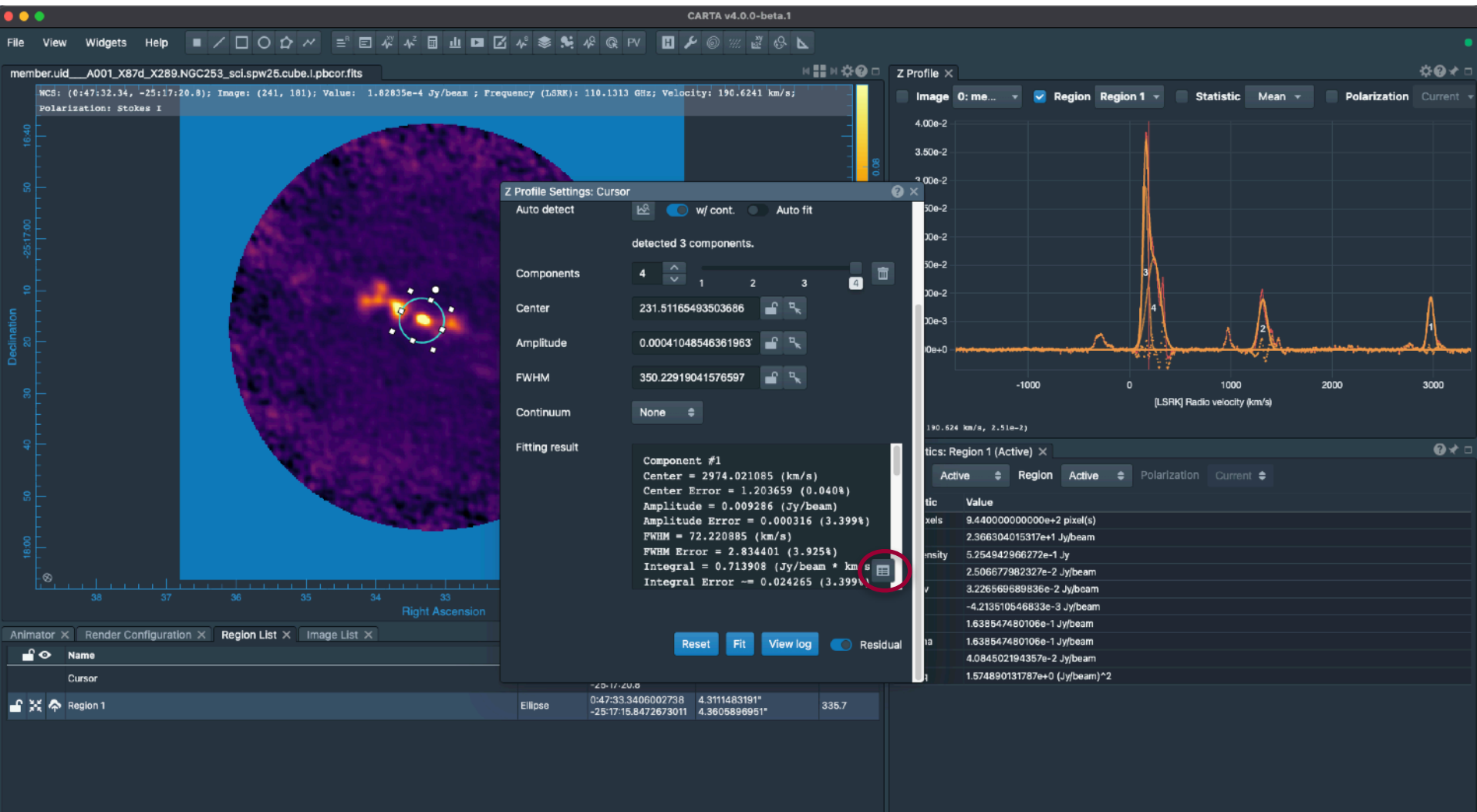
NGC 253

Line Fitting - you set components - set to 4 - enable cursor selection (use hand to choose component) - fit



NGC 253

Line Fitting - save fit



NGC 253

Contours - N, generate, apply

The screenshot displays the CARTA v4.0.0-beta.1 software interface. The main window shows a radio image of NGC 253 with a color scale from -0.02 to 0.08. A 'Contour Configuration' dialog box is open, showing a histogram of the data and a 'Generate' button. The dialog box has tabs for 'Levels', 'Configuration', and 'Styling'. The 'Levels' tab is active, showing a histogram of the data with a green vertical line at 0. The 'Generate' button is highlighted in green. Below the histogram, the 'Parameters' section shows 'Start' at 1.189e+1, 'Step' at 9.291e+0, 'N' at 5, and 'Multiplier' at 1. The 'Levels' section shows a list of levels: 11.89, 21.18, 30.47, 39.76, and 49.05. The 'Apply' button is highlighted in green. The background image shows the radio emission of NGC 253, with a color scale from -0.02 to 0.08. The axes are labeled 'Right Ascension' and 'Declination'. The 'Z Profile' window is also visible, showing a plot of radio velocity (km/s) from -1000 to 3000. The 'Region' window is also visible, showing a list of regions and their properties.

member.uid__A001_X87d_X289.NGC253_scl.spw25.cube.l.pbcor.fits.moment.integrated

WCS: (0:47:30.76, -25:16:42.8); Image: (328, 333); NaN ; Polarization: Stokes I

Contour Configuration

Data member.uid__A001_X87d_X289.NGC253_scl.spw25.cube.l.pbcor.fits.moment.integrated

source

Levels Configuration Styling

Generator start-step-multiplier **Generate**

Parameters Start 1.189e+1 Step 9.291e+0

N 5 Multiplier 1

Levels 11.89 × 21.18 × 30.47 × 39.76 × 49.05 ×

Clear Apply Close

Animator × Render Configuration × Region List × Image List ×

Name

Cursor

Region (Active) ×

Region Active Polarization Current

Value

.035300000000e+4 pixel(s)

.210145810190e+4 Jy/beam.km/s

.908156392633e+2 Jy.km/s

.750545490803e-1 Jy/beam.km/s

.322666221295e+0 Jy/beam.km/s

7.437005519857e+0 Jy/beam.km/s

.795752906799e+1 Jy/beam.km/s

.795752906799e+1 Jy/beam.km/s

.338881408170e+0 Jy/beam.km/s

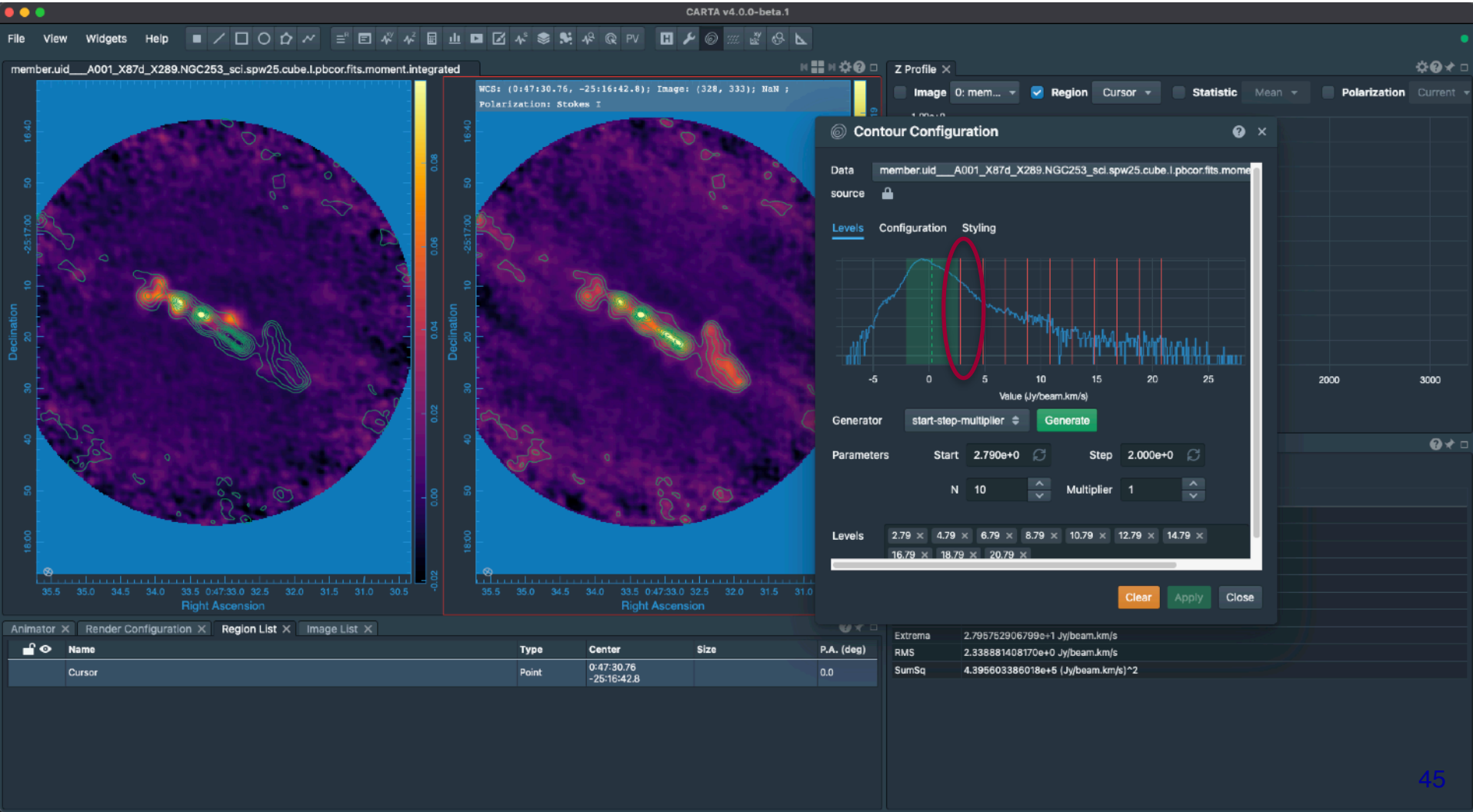
1.395603386018e+5 (Jy/beam.km/s)²

LSRK Radio velocity (km/s)

Value (Jy/beam.km/s)

NGC 253

Contours - drag contour level, set start, etc.



Extra time? Can go look at HL Tau image.