G29.7-0.3

1 Summary

- Common Name: Kes 75
- Distance: 21 kpc (**Becker & Helfand, 1984**)
- Position of Central Source (J2000): (18 46 25.5, -2 58 37.5)
- X-ray size: 3.7'x3.4'
- Description:

1.1 Summary of Chandra Observations

Sequence	Obs ID	Instrument	$\text{Exposure}_{\text{uf}}$ (ks)	$\text{Exposure}_{\text{f}}$ (ks)	Date Observed	Aimpoint (J2000) (α, δ)
500044	748	ACIS-235678	37.3	33.0	2000-10-15	(18 46 24.7, -2 58 34.0)

$\text{Exposure}_{\text{uf}} \rightarrow$ Exposure time of un-filtered event file
$\text{Exposure}_{\text{f}} \rightarrow$ Exposure time of filtered event file

- The whole remnant is covered by chip ACIS-S3(CCD_ID=7)

1.2 Chandra Counts and Fluxes

Region	Energy Range (keV)	Signal (counts)	Rate (counts s^{-1})	F_X^{abs} (ergs cm^{-2} s^{-1})	F_X (ergs cm^{-2} s^{-1})	L_X (ergs s^{-1})
Total	0.3 - 10.0	4.848e+04	1.470e+00	3.00e-11	2.50e-10	1.31e+37
(748)	0.3 - 2.1	1.534e+04	4.651e-01	2.08e-12	2.13e-10	1.12e+37
	2.1 - 10.	3.331e+04	1.010e+00	2.79e-11	3.62e-11	1.90e+36
Central Region	0.3 - 10.0	2.785e+04	8.447e-01	2.19e-11	4.47e-11	2.35e+36
(748)	0.3 - 2.1	4.813e+03	1.460e-01	7.02e-13	1.82e-11	9.57e+35
	2.1 - 10.	2.312e+04	7.010e-01	2.12e-11	2.66e-11	1.40e+36
Outer Shell	0.3 - 10.0	2.036e+04	6.174e-01	8.09e-12	2.05e-10	1.08e+37
(748)	0.3 - 2.1	1.040e+04	3.154e-01	1.38e-12	1.95e-10	1.03e+37
	2.1 - 10.	1.005e+04	3.048e-01	6.73e-12	9.64e-12	5.06e+35

- N_H = 3.43 ($10^{22} cm^{-2}$)
- Assumed distance: 21 kpc (**Becker & Helfand, 1984**)

- nH was derived by simultaneously fitting outer shell(two thermal plasma model) and central region(power-law)

1.3 Nearby Sources

Obs ID	Position (J2000)	Size	Net Count	Count rate	Note
748					
	(18 45 41.9, -2 57 53.1)	< 15.9”	57.3	1.54e-03	
	(18 46 13.9, -3 05 04.2)	< 5.6”	32.8	8.80e-04	
	(18 46 14.1, -2 59 16.4)	< 2.3”	30.1	8.07e-04	
	(18 46 17.5, -3 02 53.4)	< 3.4”	207.0	5.55e-03	
	(18 46 17.6, -3 00 04.4)	< 2.0”	28.0	7.51e-04	
	(18 46 18.3, -3 01 06.0)	< 2.1”	89.9	2.41e-03	
	(18 46 20.5, -2 57 30.3)	< 3.0”	17.5	4.69e-04	
	(18 46 21.2, -2 58 15.6)	< 2.0”	11.0	2.95e-04	
	(18 46 32.1, -2 57 24.5)	< 2.1”	44.4	1.19e-03	
	(18 46 36.0, -3 01 18.6)	< 3.9”	19.3	5.18e-04	
	(18 46 37.5, -2 55 16.5)	< 7.9”	70.9	1.90e-03	

(note) 1. This nearby source list is incomplete.
All the above sources are originally from the "src2.fits" file
which is distributed with standard chandra processing.
Only sources with significant count rate and which are clear to
visual inspection are included.
2. The size given above is the size of the region used in detecting
that source.
3. For each source, background was subtracted from annular region
around the source.

1.4 References

- Becker & Helfand, 1984 : VLA at 5 GHz and HI

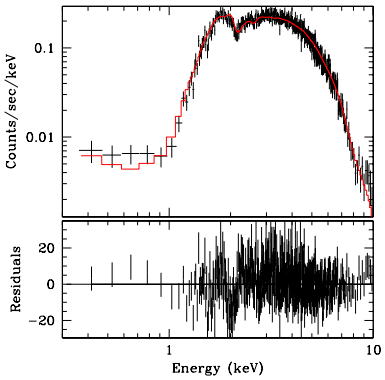
2 Fit Detail

- See spectrum page for used regions.

2.1 Central region:

- spectrum from were simultaneously fitted with common absorption model.
- power-law model used for this region.
- individual fit for this region gives nH=3.77

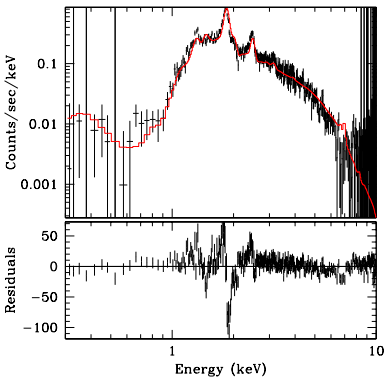
source=(xswabs * powlaw1d)
reduced χ^2 = 0.904381
nh = `3.4337 10^22/cm^2`



2.2 Outer Shell:

- spectrum from were simultaneously fitted with common absorption model.
- Two thermal plsama model used for this region.
- individual fit for this region gives nH=3.24

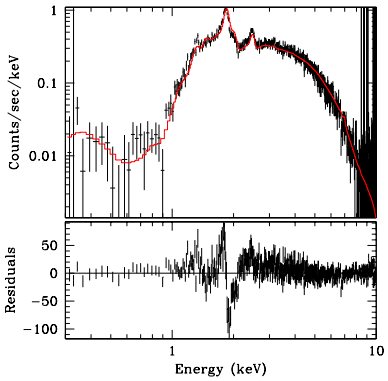
source=(xswabs * (xsvraymond + xsvraymond))
reduced χ^2 = 1.96879
nh = `3.4337`



2.3 Total:

- spectrum models for are just added.

source=(xswabs * ((xsvraymond + xsvraymond) + powlaw1d))
reduced χ^2 = 1.51353
nh = `3.4337 10^22/cm^2`

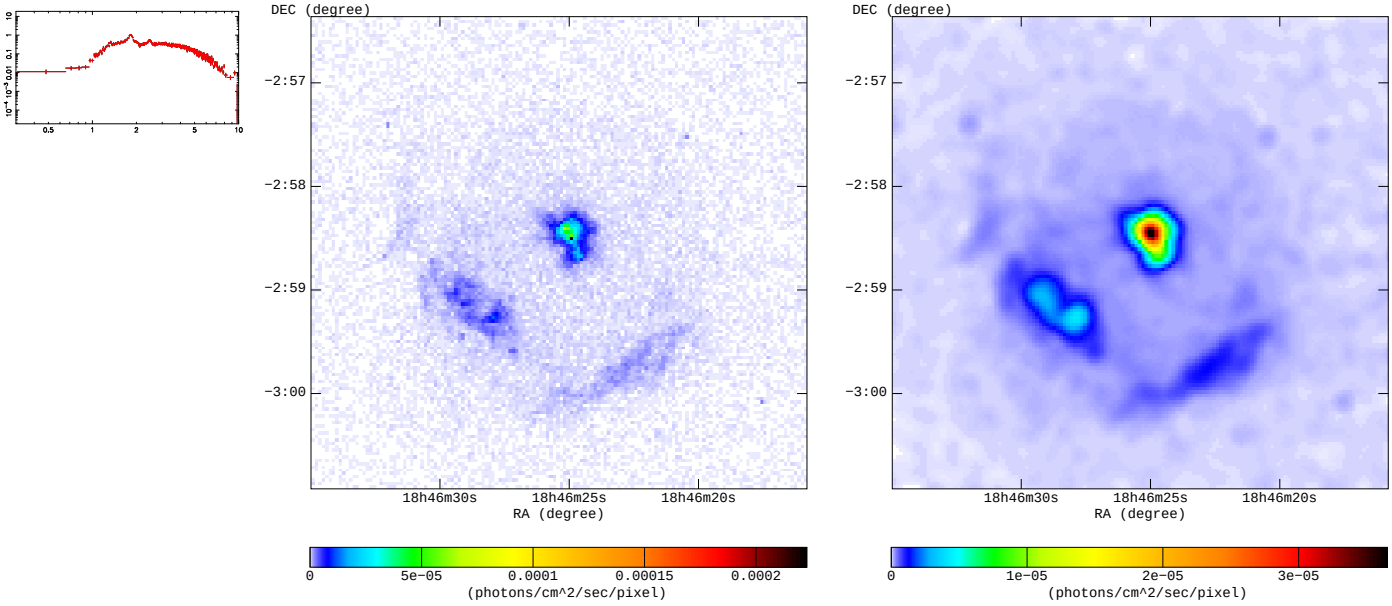


3 Chandra Images : Band Images

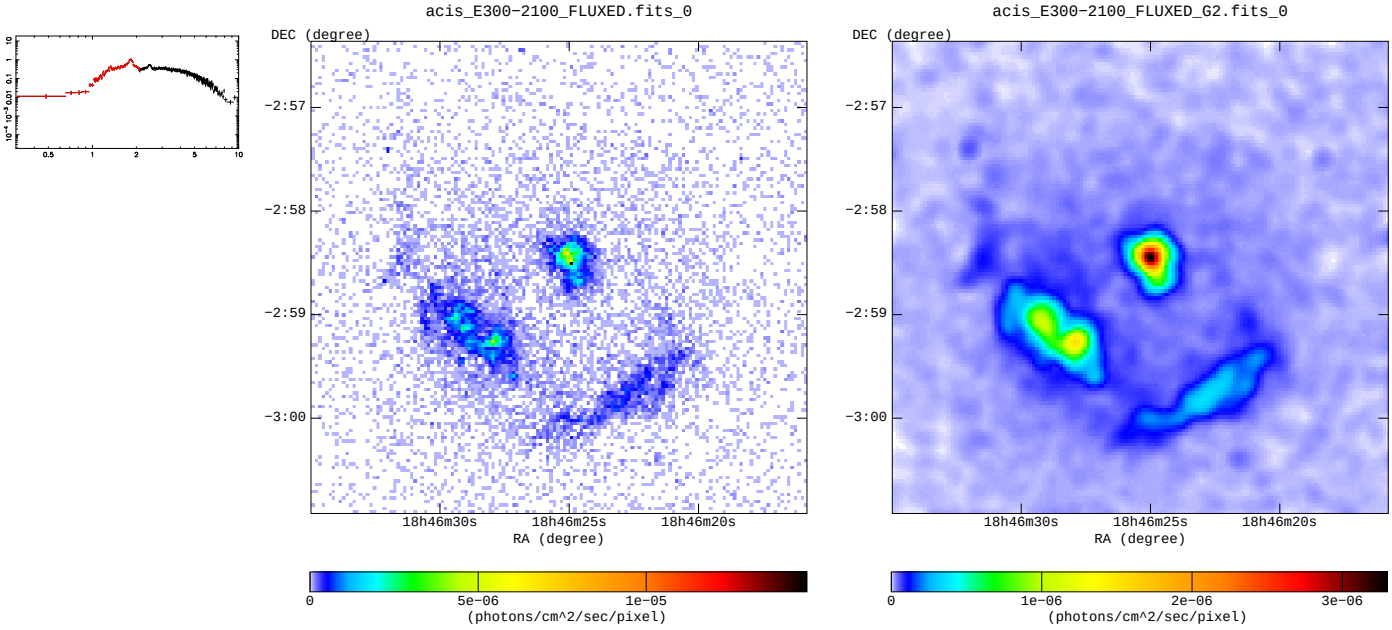
- Left : raw image, binned by 1x1 pixel
- Right : gaussian smoothed version of above (σ = 2 pixel)

3.1 Wide Band Images

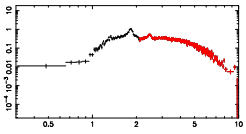
Total : 300-10000 eV

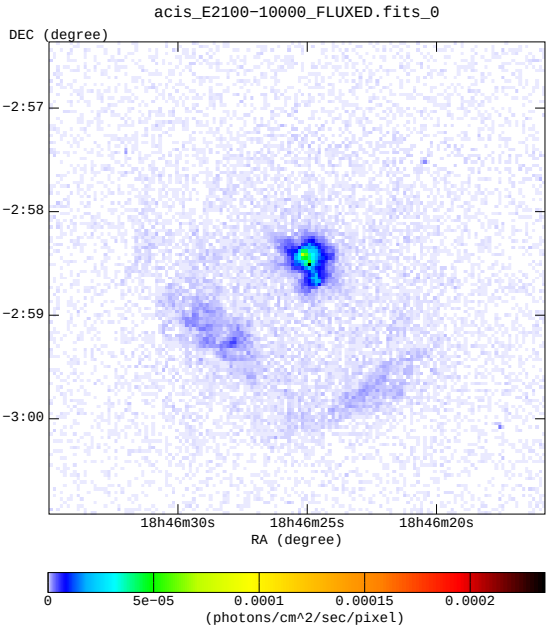


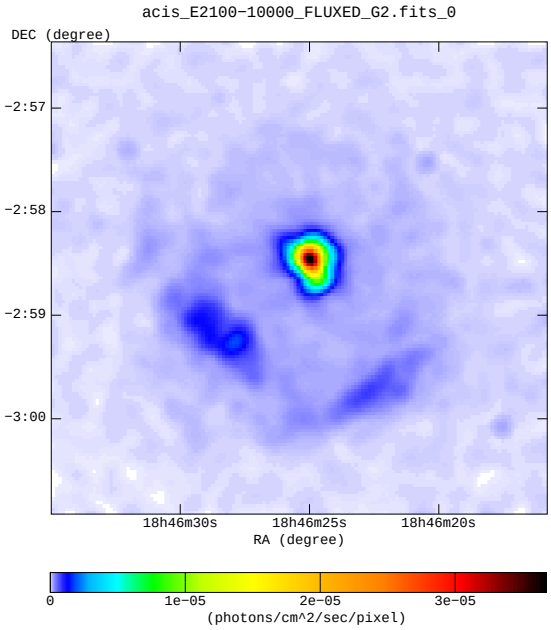
Soft Band : 300-2100 eV



Hard Band : 2100-10000 eV

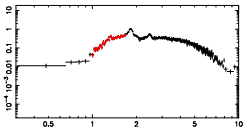


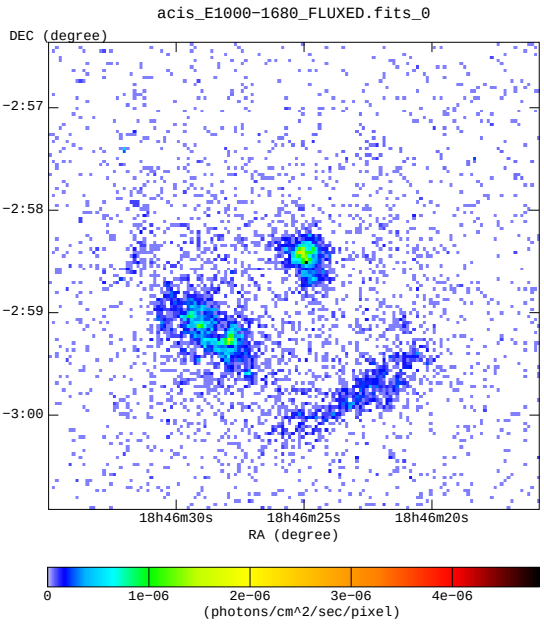


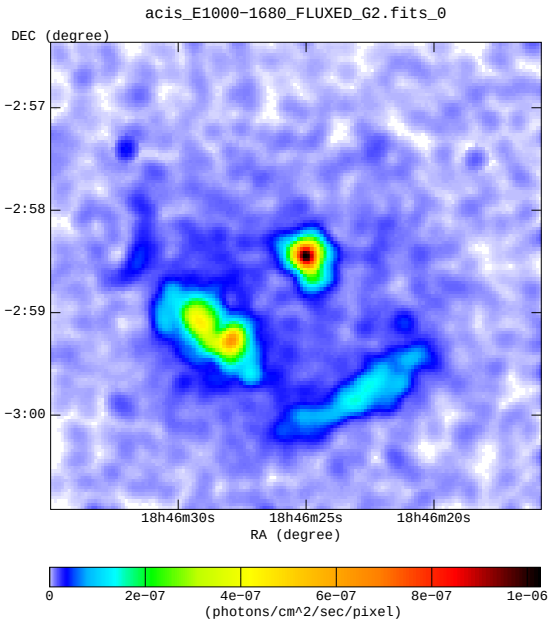


3.2 Band images used in true color image.

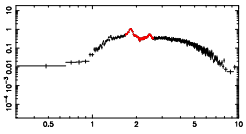
Red : 1000-1680 eV

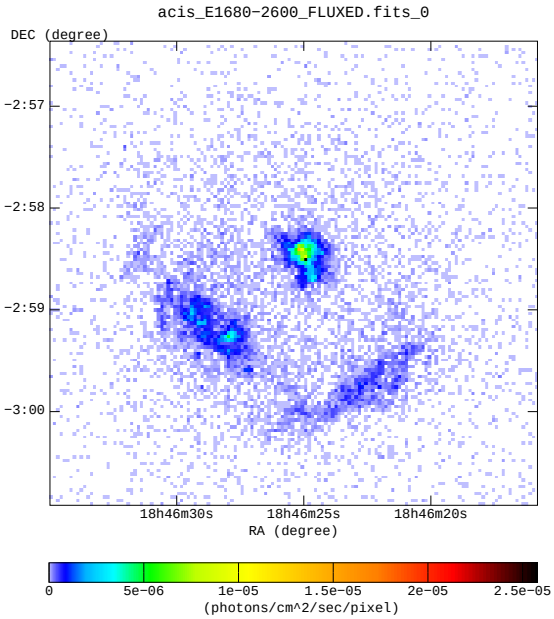


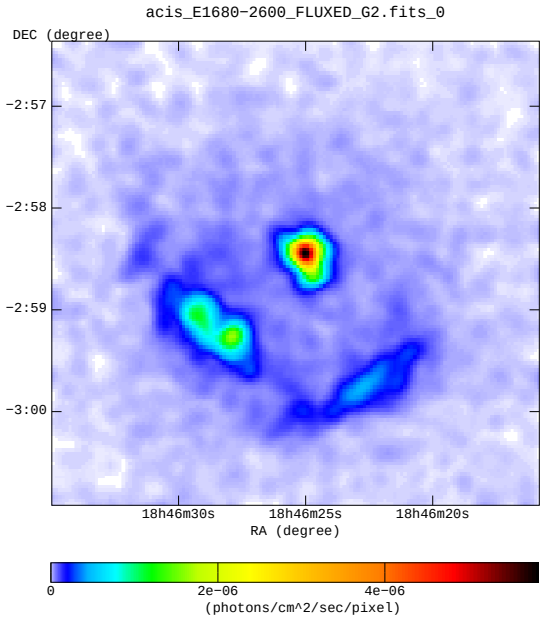




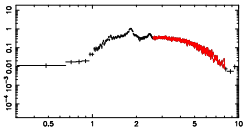
Green : 1680-2600 eV

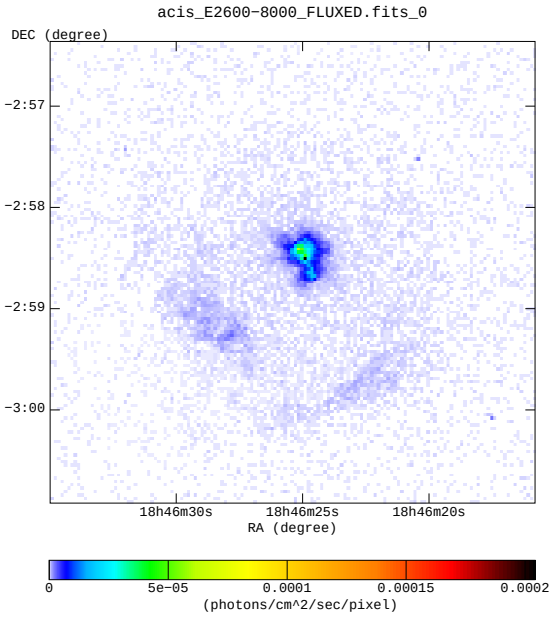


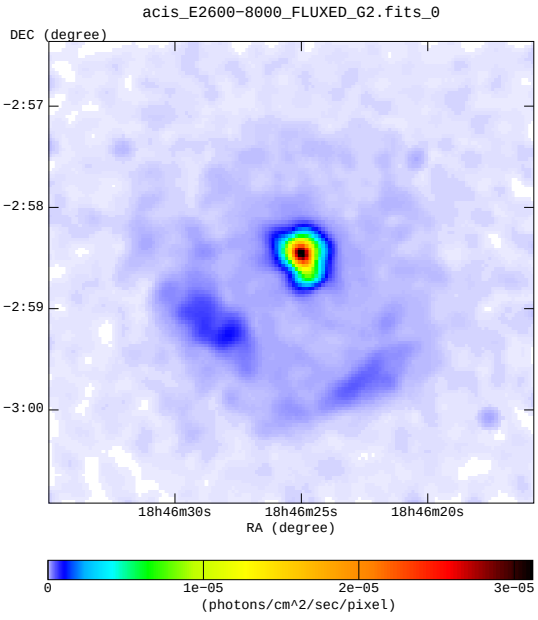




Blue : 2600-8000 eV







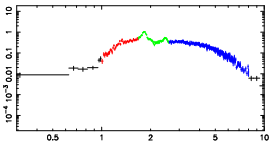
3.3 Misc.

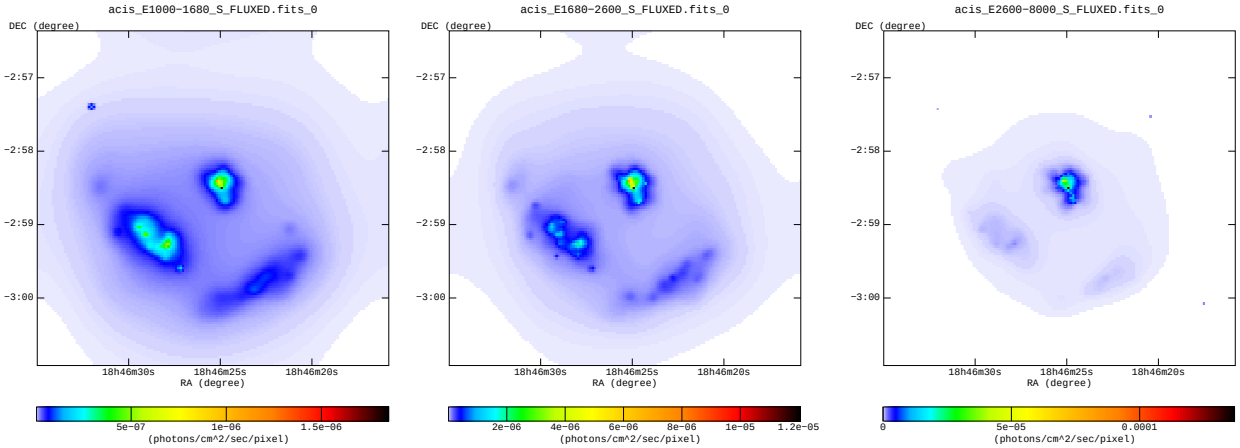
4 Chandra Images : True Color

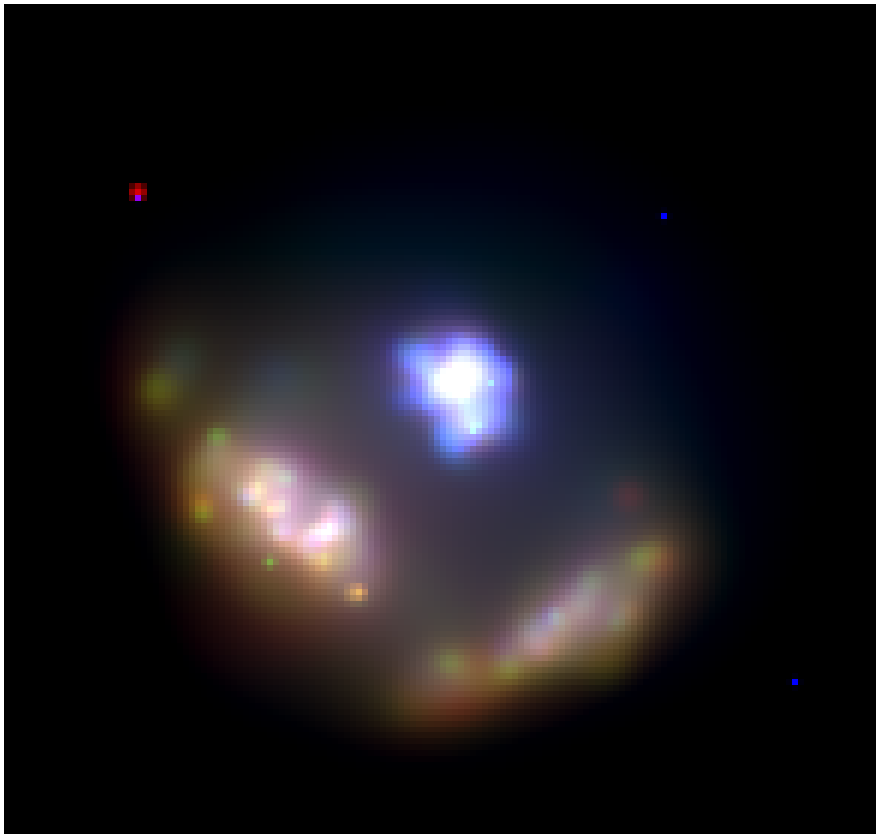
- Individual images are adaptively smoothed.
- Warning : the adaptive smoothing process sometimes produces artifacts.

- convolution method : fft
- kernel type : gauss
- significance (min , max) : (3 , 5)

RED : 1000-1680 eV
GREEN : 1680-2600 eV
BLUE : 2600-8000 eV







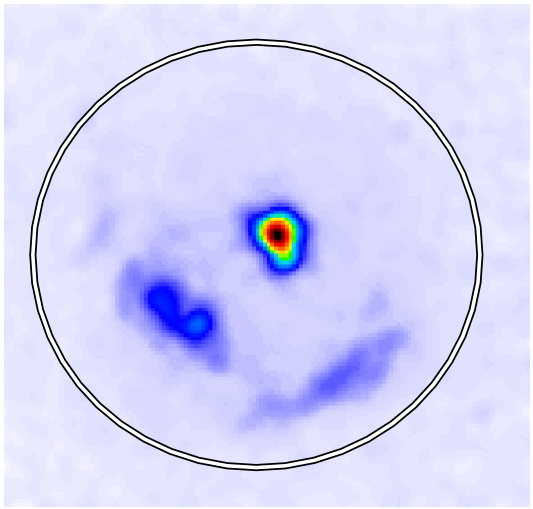
5 Chandra Spectrum

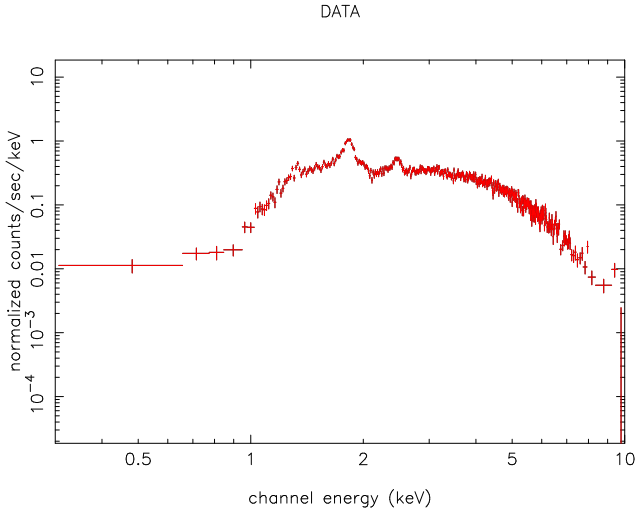
- Images show Regions used to extract spectra
- Regions with red strikes are excluded

5.1 ObsID 748

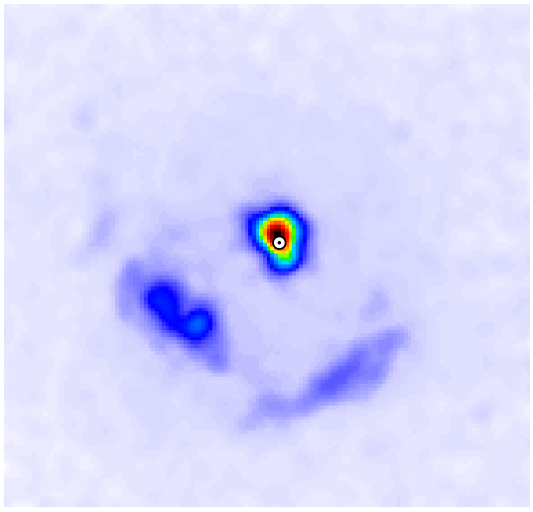
- Background was subtracted from the region around the SNR.

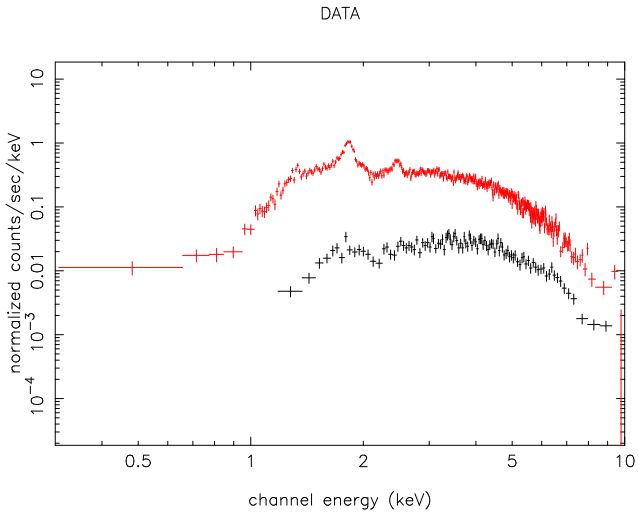
Total



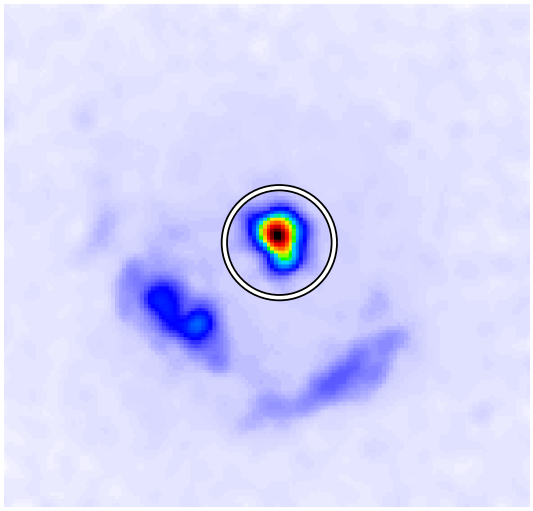


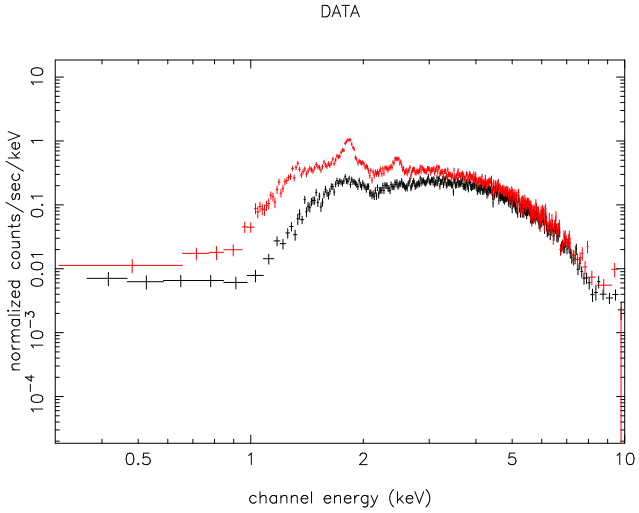
Central Source



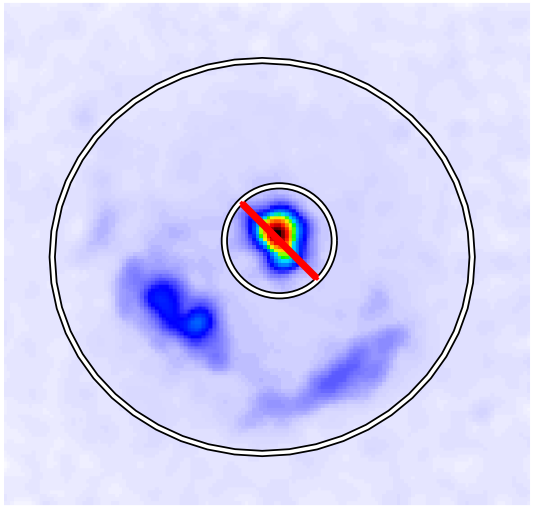


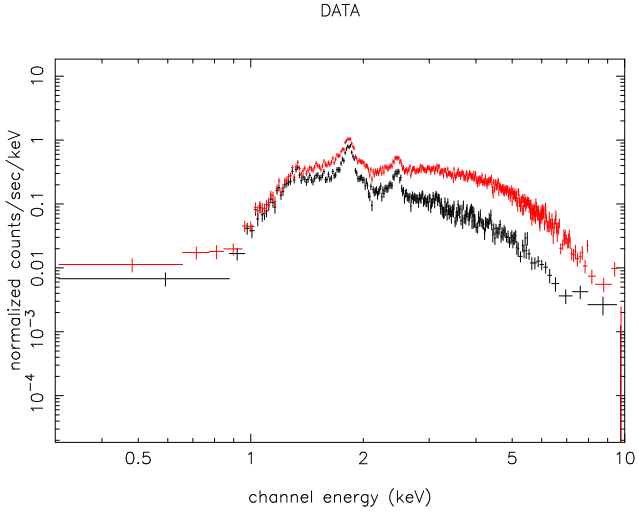
Central Region

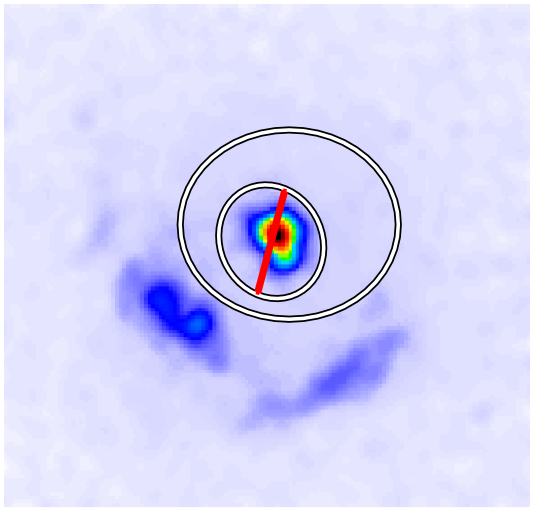


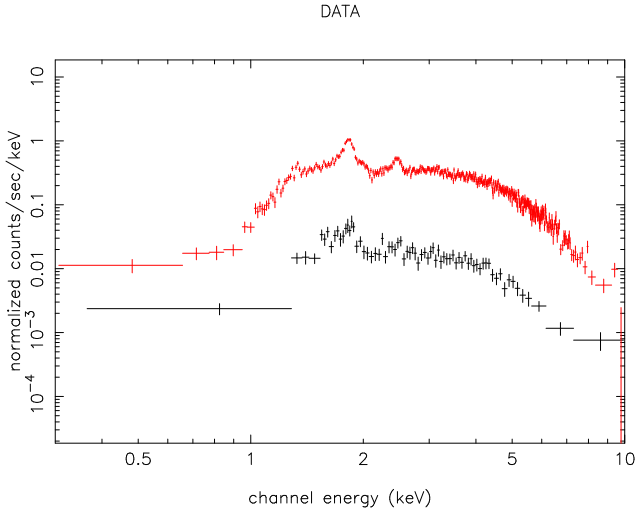


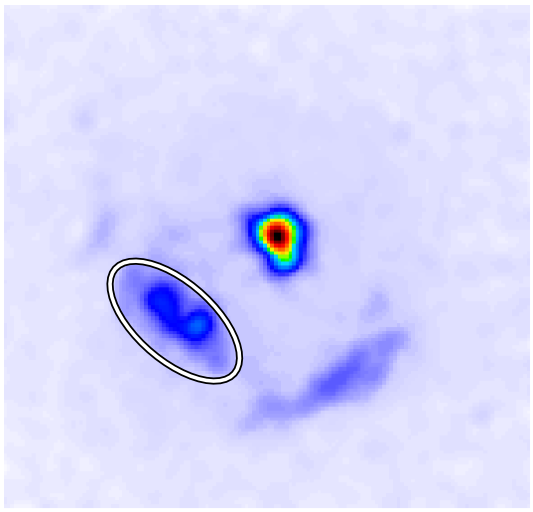
Outer Shell

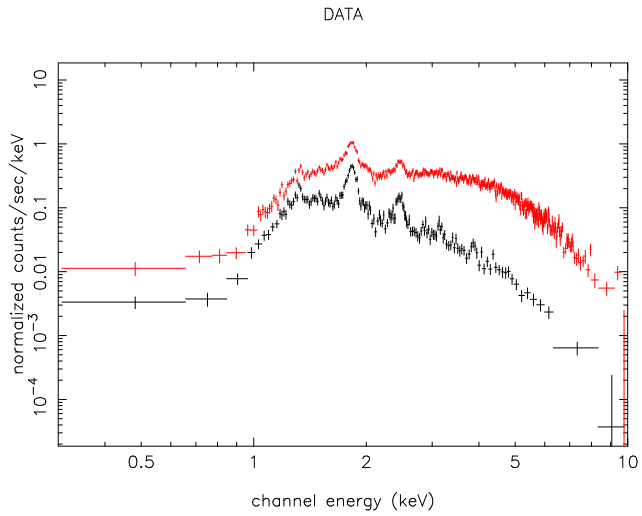


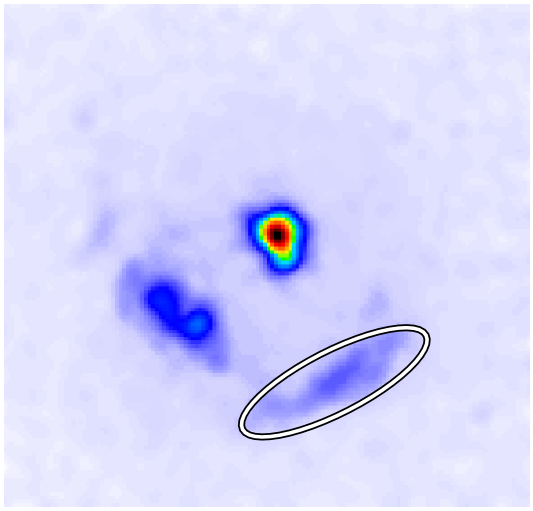


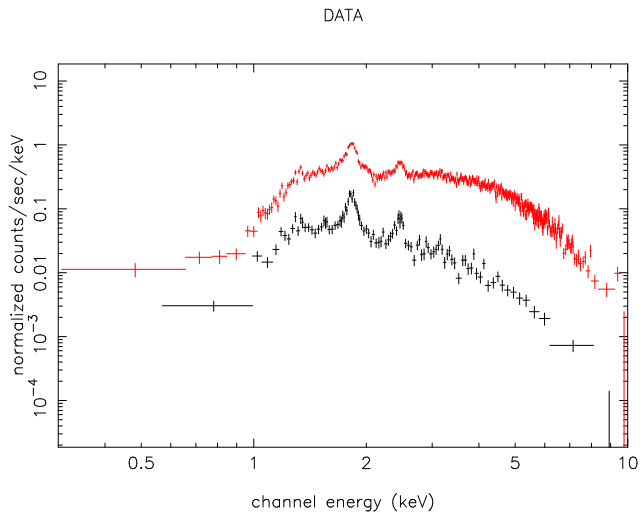


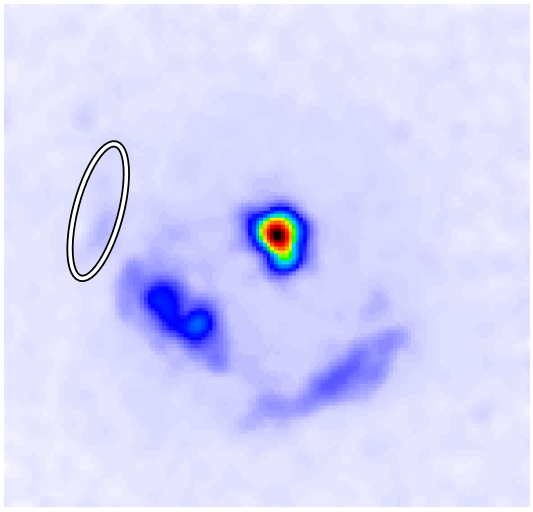


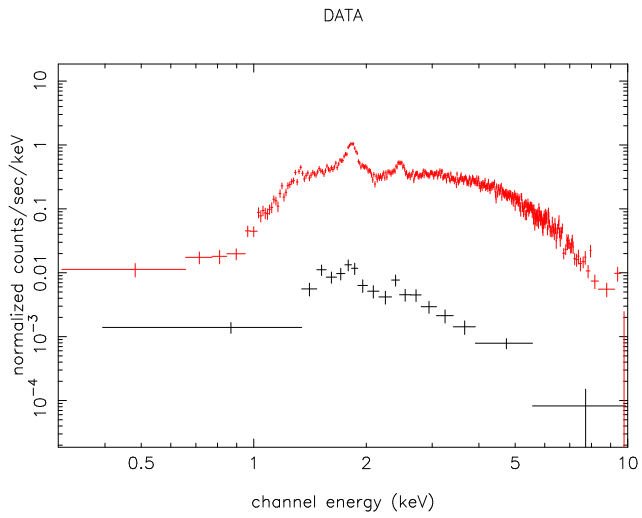



DATA
normalized counts/sec/keV
channel energy (keV)




DATA
normalized counts/sec/keV
channel energy (keV)

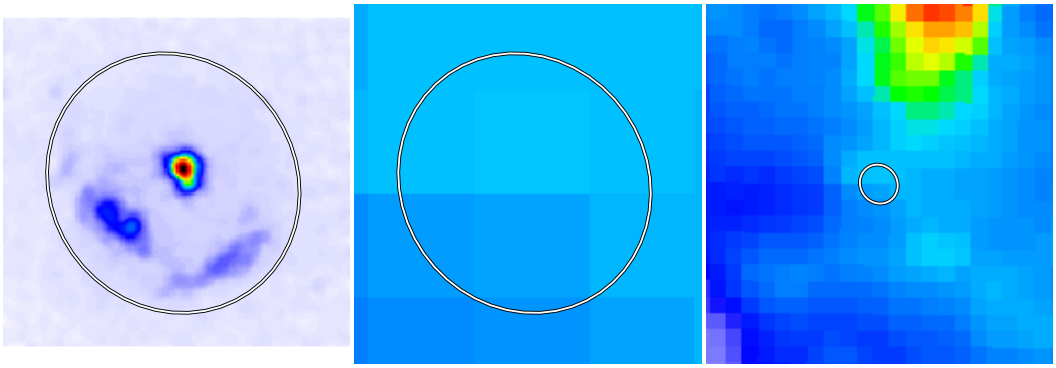



DATA
normalized counts/sec/keV
channel energy (keV)

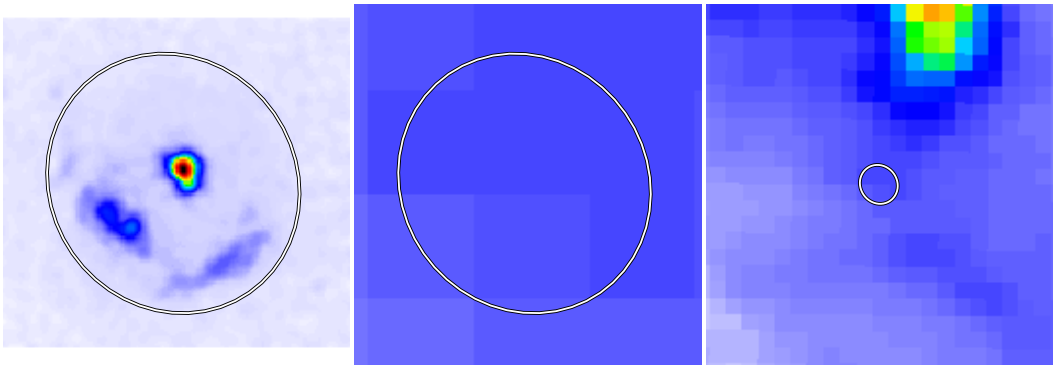
6 Images from Survey Missions

- Left : Chandra Image (0.3-10. keV)
- Center : Images from *SkyView* with the **same** scale
- right : Images from *SkyView* with a **reduced** scale

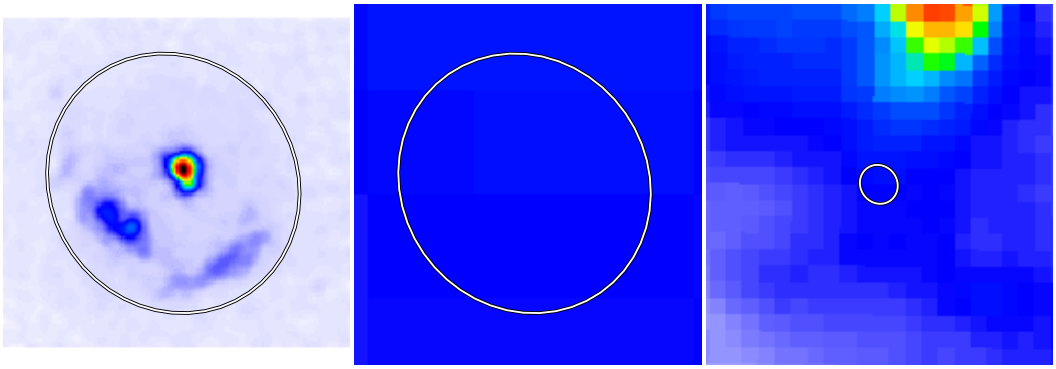
IRAS 12 micron: Infrared (12 micron)



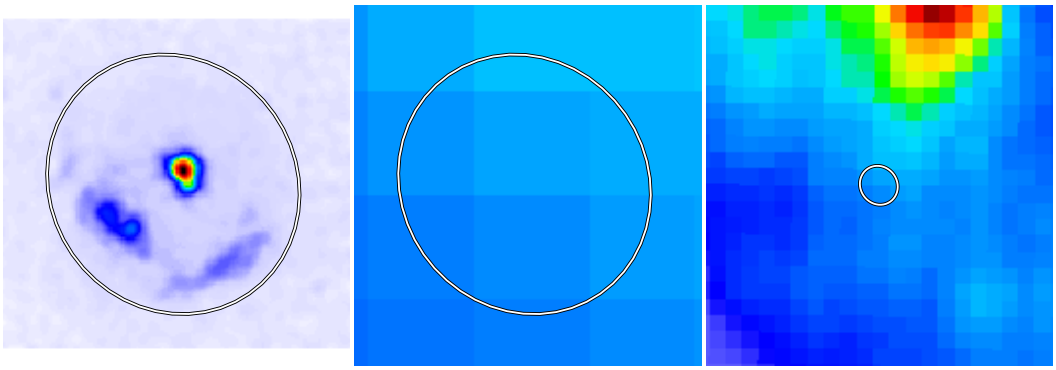
IRAS 25 micron: Infrared (25 micron)



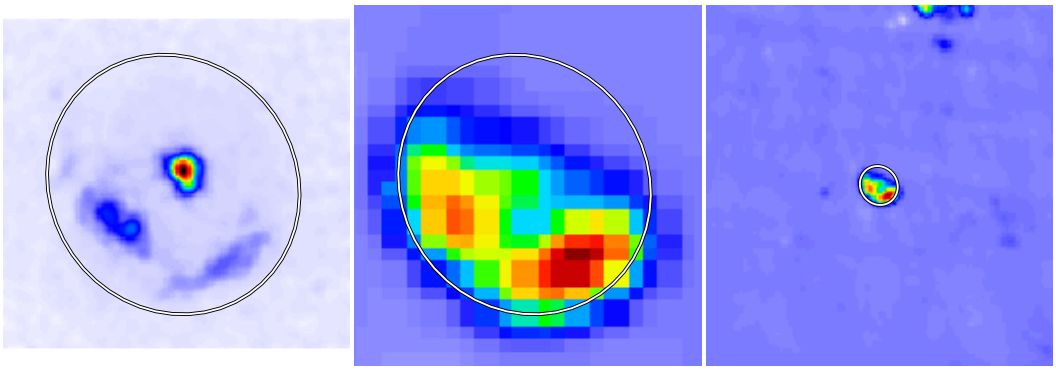
IRAS 60 micron: Infrared (60 micron)



IRAS 100 micron: **Infrared (100 micron)**



NRAO VLA Sky Survey (NVSS): **Radio (1.4 GHz Continuum)**



Digitized Sky Survey: **Optical (J or E band images with a few exceptions)**