

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	Exposure _{uf} (ks)	Exposure _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)

Exposure_{uf} → Exposure time of un-filtered event file
 Exposure_f → 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 (748)	0.3 - 10.0	4.848e+04	1.470e+00	3.00e-11	2.50e-10	1.31e+37
	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 (748)	0.3 - 10.0	2.785e+04	8.447e-01	2.19e-11	4.47e-11	2.35e+36
	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 (748)	0.3 - 10.0	2.036e+04	6.174e-01	8.09e-12	2.05e-10	1.08e+37
	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

- NH = 3.43 (10²² 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 748	Position (J2000)	Size	Net Count	Count rate	Note
	(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

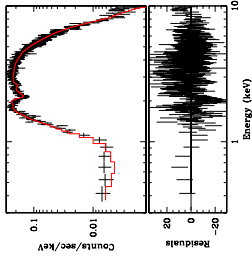
2 Fit Detail

- 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 $nH=3.77$

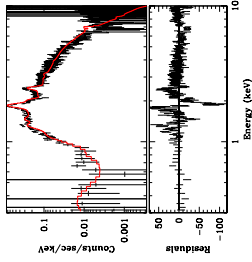
```
source=(xswabs * powlaw |d)
reduced  $\chi^2 = 0.904381$ 
nh = 3.4337 1022/cm2
```



2.2 Outer Shell:

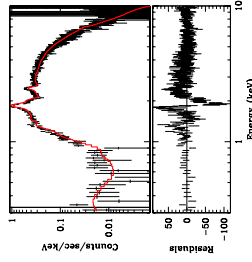
- spectrum from were simultaneously fitted with common absorption model.
- Two thermal plasma model used for this region.
- individual fit for this region gives $nH=3.24$

```
source=(xswabs * (xsvraymond + xsvraymond))
reduced  $\chi^2 = 1.96879$ 
nh = 3.4337
```



2.3 Total:

- spectrum models for are just added.
- ```
source=(xswabs * ((xsvraymond + xsvraymond) + powlaw |d))
reduced $\chi^2 = 1.51353$
nh = 3.4337 1022/cm2
```

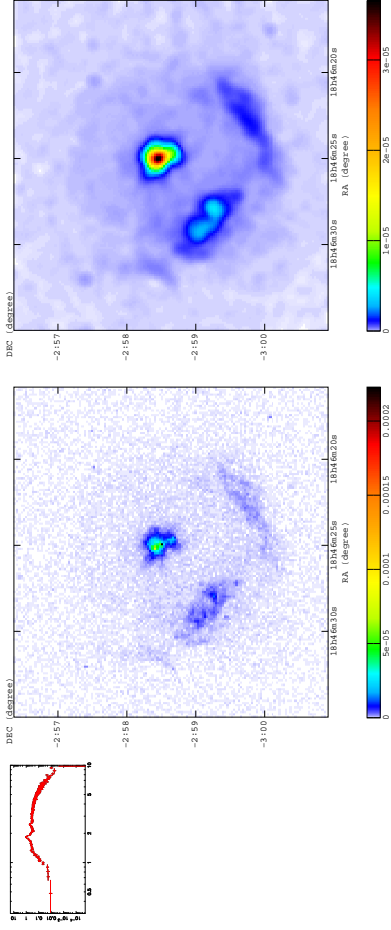


## 3 Chandra Images : Band Images

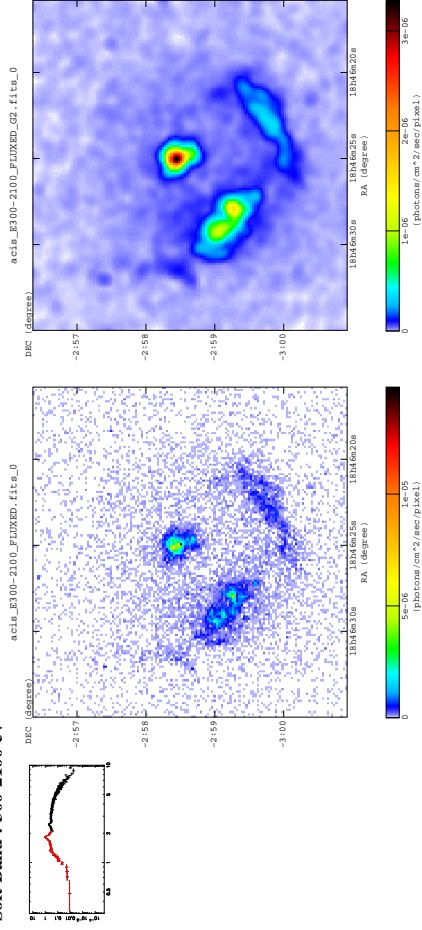
- Left : raw image, binned by 1x1 pixel
- Right : gaussian smoothed version of above ( $\sigma = 2$  pixel)

### 3.1 Wide Band Images

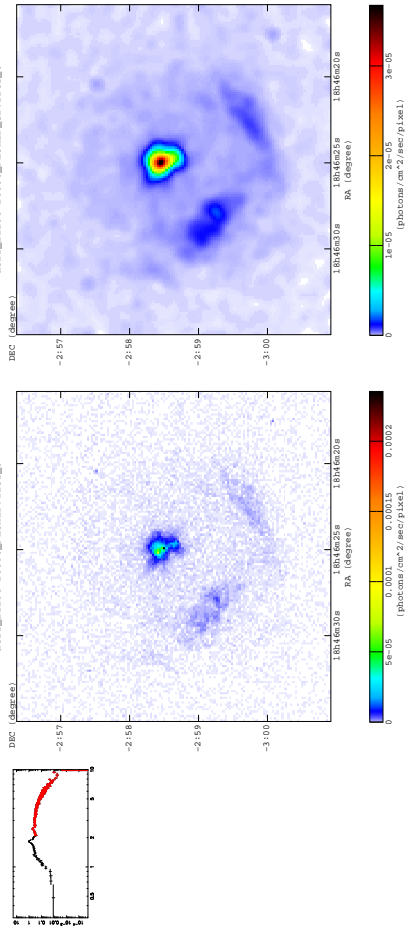
Total : 300-10000 eV



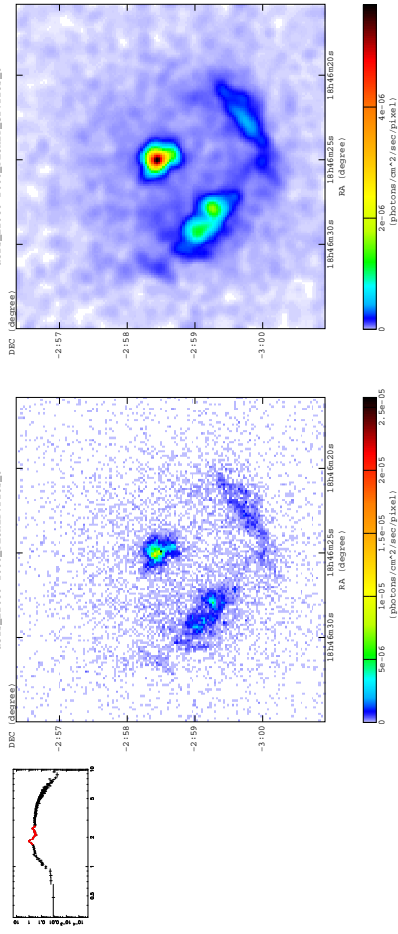
Soft Band : 300-2100 eV



**Hard Band : 2100-10000 eV**

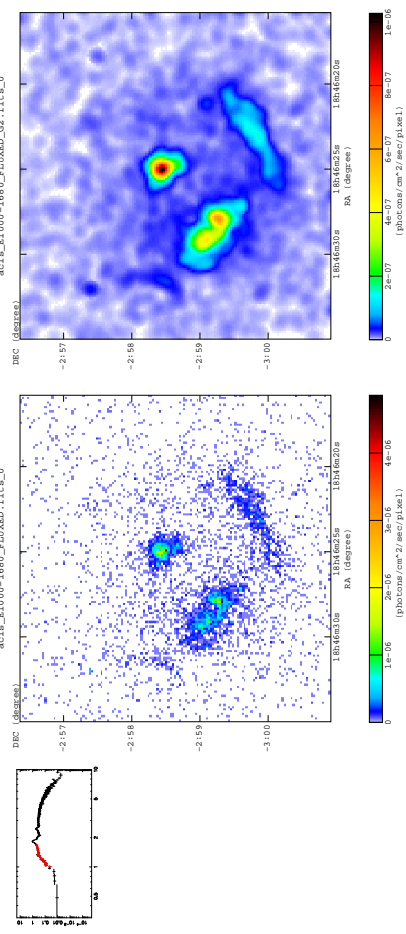


**Green : 1680-2600 eV**

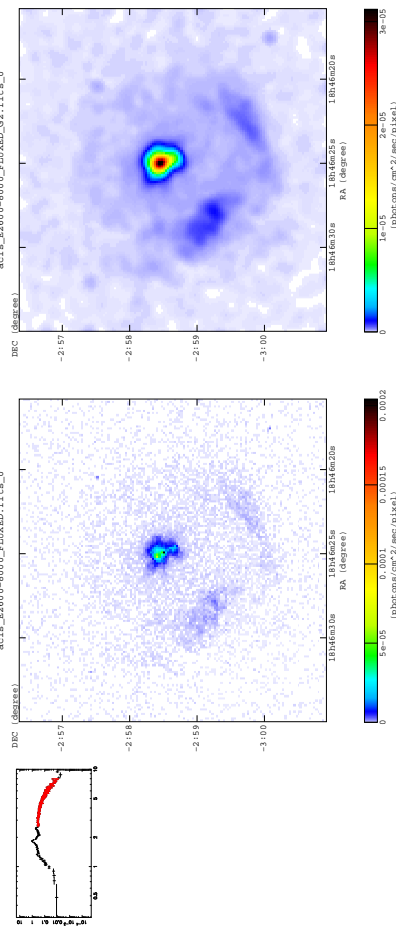


**3.2 Band images used in true color image.**

**Red : 1000-1680 eV**



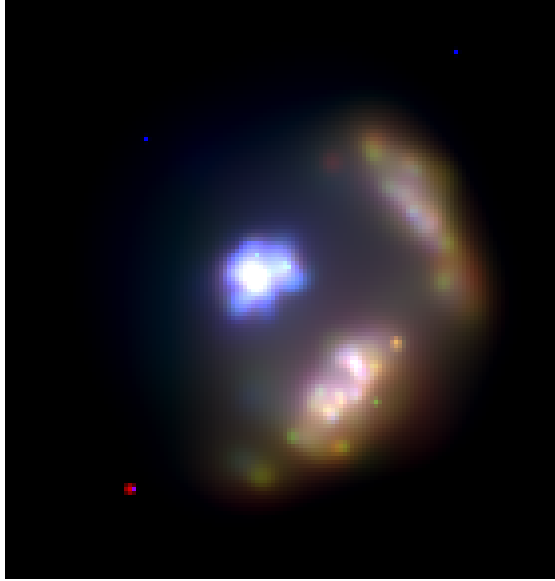
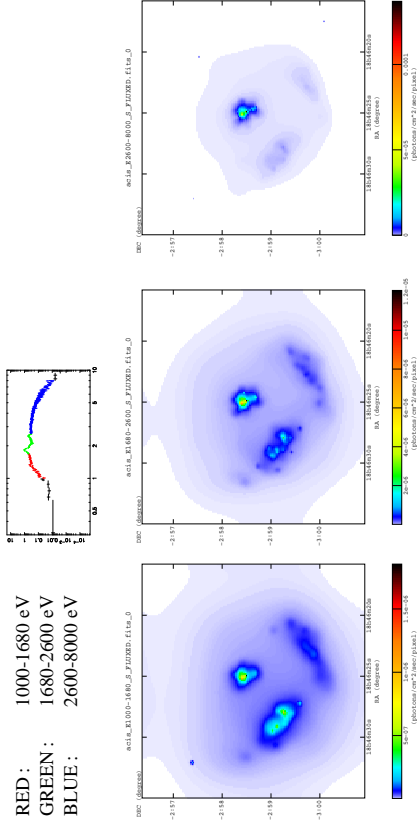
**Blue : 2600-8000 eV**



#### 4 Chandra Images : True Color

- Individual images are adaptively smoothed.
- Warning : the adaptive smoothing process sometimes produces artifacts.
- convolution method : fit
- kernel type : gauss
- significance ( min , max ) : ( 3 , 5 )

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



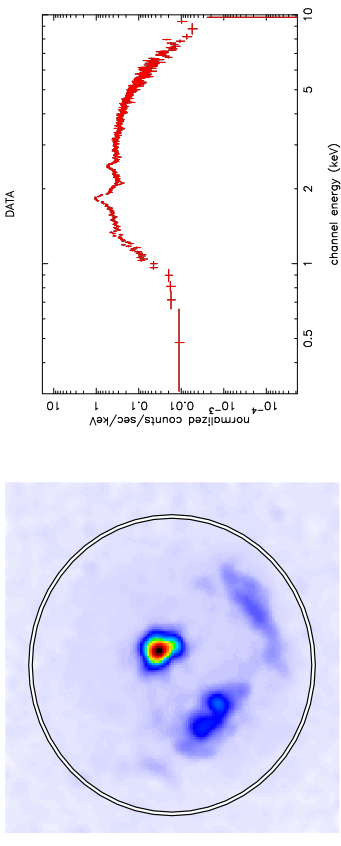
#### 5 Chandra Spectrum

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

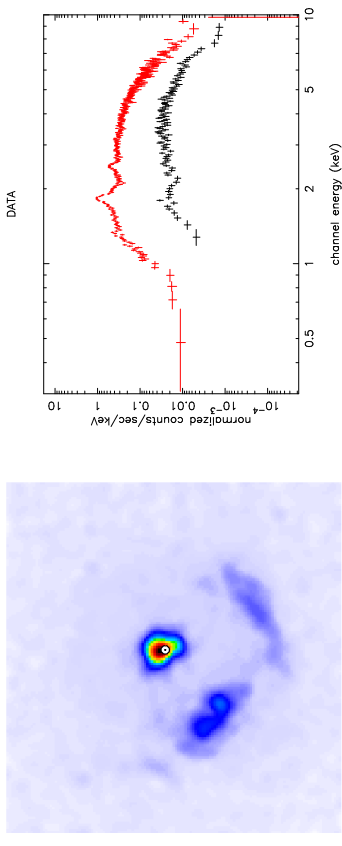
##### 5.1 ObsID 748

- Background was subtracted from the region around the SNR.

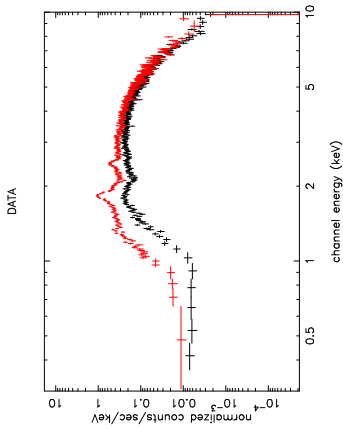
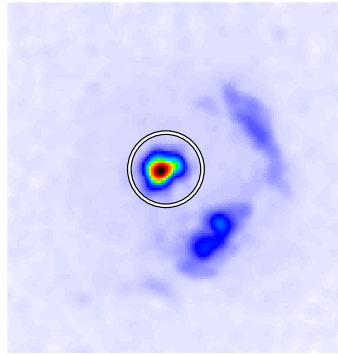
Total



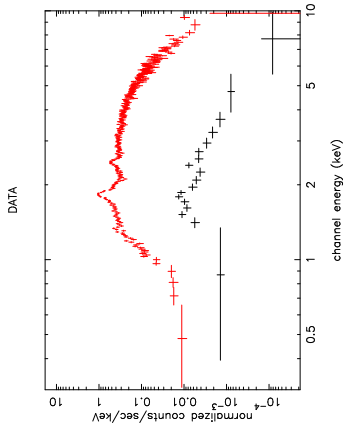
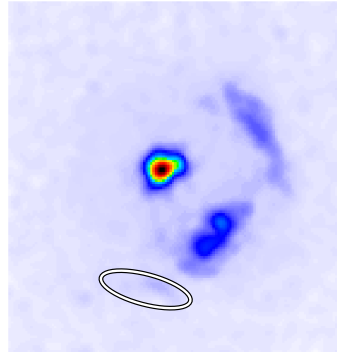
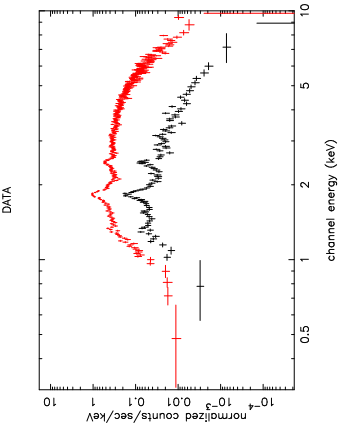
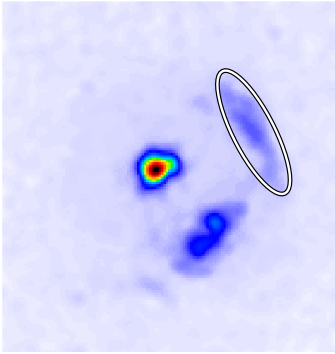
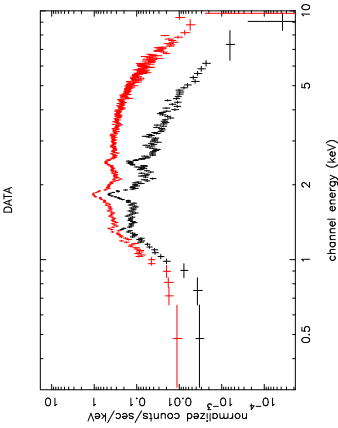
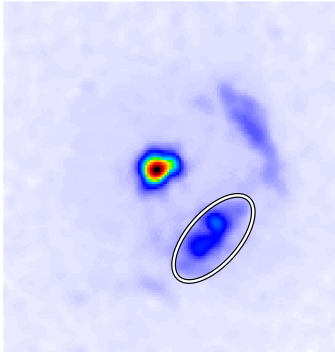
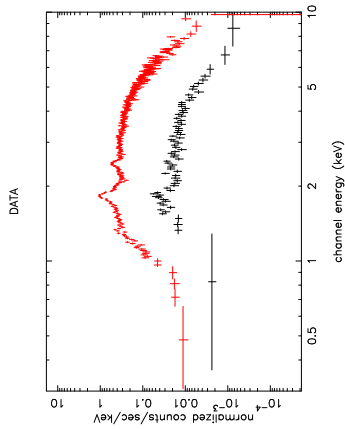
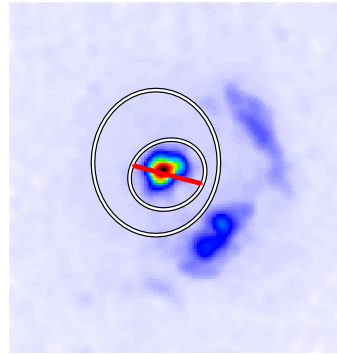
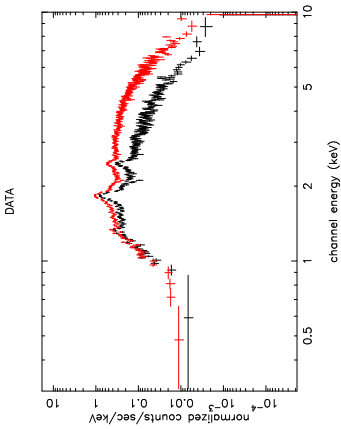
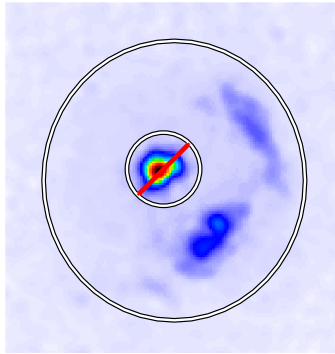
Central Source



**Central Region**



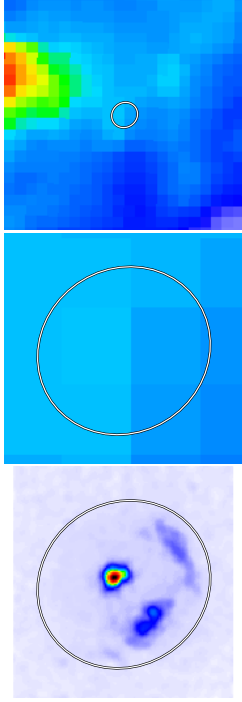
**Outer Shell**



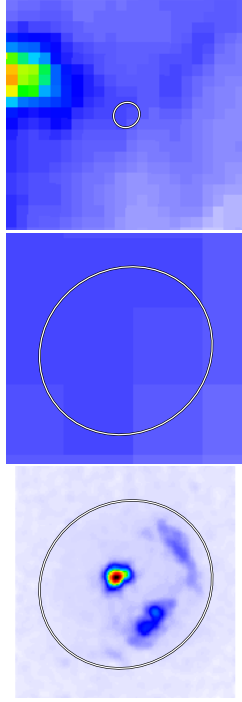
### 6 Images from Survey Missions

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

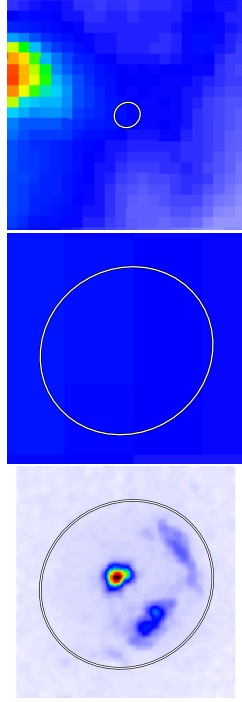
#### IRAS 12 micron: Infrared (12 micron)



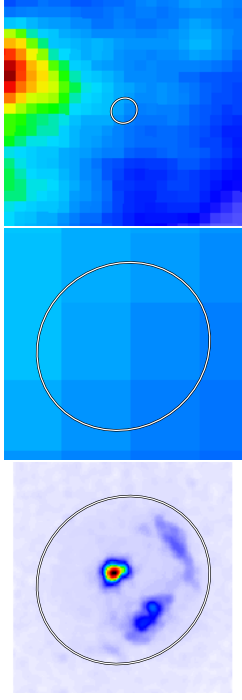
#### IRAS 25 micron: Infrared (25 micron)



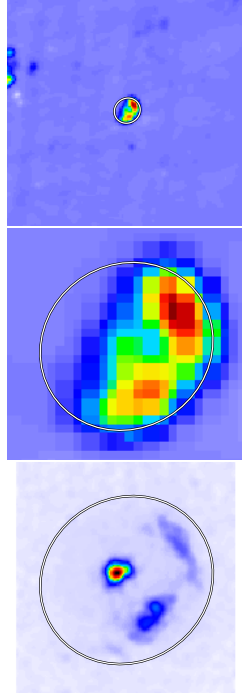
#### IRAS 60 micron: Infrared (60 micron)



#### 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)

