SNR 0525-69.6

1 Summary

- Common Name: N 132D
- Distance: 50 kpc (distance to LMC, Westerlund(1990))
- Center of X-ray emission (J2000): (05 25 03.3, -69 38 27.4)
- X-ray size: 130"x100"
- Description: irregular shell with "break out" in NE

1.1 Summary of Chandra Observations

Sequence	Obs ID	Instrument	Exposure _{uf} (ks)	Exposure _f (ks)	Date Observed	Aimpoint (J2000) (α, δ)
500008	1828	ACIS-456789	74.7	72.7	2000-07-20	(05 25 02.1, -69 38 59.0)

 $\begin{array}{l} {\rm Exposure}_{uf} \rightarrow {\rm Exposure \ time \ of \ un-filtered \ event \ file} \\ {\rm Exposure}_{f} \rightarrow {\rm Exposure \ time \ of \ filtered \ event \ file} \end{array}$

- Obs ID 1828 is Grating observation. Order 0 event is used for all the data product.
- The whole remnant is covered by chip ACIS-S3(CCD_ID=7)

1.2 Chandra Counts and Fluxes

Region	Energy Range	Signal	Rate	$F_{\rm X}^{\rm abs}$	F _x	L _x
	(keV)	(counts)	(counts s^{-1})	$(ergs cm^{-2} s^{-1})$	$(ergs cm^{-2} s^{-1})$	(ergs s^{-1})
total	0.3 - 10.0	2.088e+05	2.873e+00	1.10e-10	3.39e-10	1.01e+38
(1828)	0.3 - 2.1	1.984e+05	2.730e+00	1.04e-10	3.33e-10	9.92e+37
	2.1 - 10.	1.061e+04	1.460e-01	6.05e-12	6.36e-12	1.90e+36

• $N_{\rm H} = 0.24 \ (10^{22} cm^{-2})$

- Assumed distance: 50 kpc (distance to LMC, Westerlund(1990))
- nH was derived by fitting the spectum with two thermal plsma model.

1.3 Nearby Sources

Obs ID	Position (J2000)	Size	Net Count	Count rate	Note
1828					
	(05 24 26.4, -69 36 13.3)	< 3.9"	74.6	9.98e-04	
	(05 24 43.8, -69 40 25.4)	< 3.0"	20.1	2.69e-04	
	(05 24 50.3, -69 34 54.8)	< 4.9"	23.6	3.16e-04	
	(05 25 16.8, -69 38 38.1)	< 3.0"	71.0	9.50e-04	
	(05 25 17.1, -69 43 10.7)	< 4.9"	44.6	5.97e-04	
	(05 26 04.5, -69 38 22.7)	< 4.9"	19.8	2.65e-04	

- (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

- Dickel & Milne, 1995 AJ, 109, 200 : ATCA 3.5cm
- Westerlund, 1990 A&ARv, 2, 29 : Distance to LMC

2 Fit Detail

• See spectrum page for used regions.

2.1 Total:

- Two thermal plsam model were used.
- abundace were set to 0.3 except O, Ne, Fe which were thawed and linked between two model.
- seperate fit of two particular regions gives 0.19 and 0.11 (see below)

 $\begin{array}{l} \mbox{source=(xswabs * (xsvraymond + xsvraymond))} \\ \mbox{reduced } \chi^2 = 5.06251 \\ \mbox{nh} = 0.2441 \ 10^22/\mbox{cm}^2 2 \end{array}$

2.2 Clump 1:

- Region : clump 1
- Same method as above.

 $\begin{array}{l} source=(xswabs * (xsvraymond + xsvraymond)) \\ reduced \ \chi^2 = 1.92433 \\ nh = 0.1880 \ 10^{22}/\text{cm}^2 \end{array}$

2.3 Clump 2:

- Region : clump 2
- Same method as above.

 $\begin{array}{l} source=(xswabs * (xsvraymond + xsvraymond)) \\ reduced \ \chi^2 = 2.45162 \\ nh = 0.1173 \ 10^{22}/\text{cm}^2 \\ \end{array}$







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

10⁻⁴ 10⁻³ 0.01



Soft Band : 300-2100 eV





Hard Band : 2100-10000 eV

3.2 Band images used in true color image.

Red : 300-700 eV







Blue : 1600-10000 eV



3.3 Misc.





: 720-950 eV





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)





5 **Chandra Images : Equivalent Width Map**

5.1 **Equivalent Width Images**

- individual images(line and two continuum) are binned by given pixel size and then adaptively smoothed.
- same scale map (from the least count images) was used for all three images.
- continuum at given line position was estimated by linear interpolation of two continuum image in pixel-by-pixel base.

continuum :	620-720 eV	-
line :	720-950 eV	0.01 0.1
continuum :	950-1080 eV	10-4 10-2







6 Chandra Spectrum

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

6.1 ObsID 1828

• Background was subtracted from the region around the SNR.

total





























7 Radio Image

- left : radio image
- right : chandra x-ray image with radio contour lines

3.5-cm

- -. Image from Dickel & Milne(1995)
- -. 3.5-cm flux density: 1.20 Jy



8 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

ROSAT PSPC (1.0 deg): X-ray (0.1-2.4 keV)



IRAS 12 micron: Infrared (12 micron)



IRAS 25 micron: Infrared (25 micron)



IRAS 60 micron: Infrared (60 micron)



IRAS 100 micron: Infrared (100 micron)



4850 MHz: Radio (4850 MHz continuum)



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

