

# SMA data archive

Eric Keto

# SMA is the first radio interferometer to offer an archive of imaged data

- Liberty
  - Create a data base of freely, easily accessible observations in a common format (FITS).
- Equality
  - Increase scientific output by making SMA data equally accessible to all astronomers.
- Fraternity
  - Increase the number of scientists using the SMA observations.

# SMA offers 3 data products 3 levels of processing

- Raw data
- Calibrated data
- Imaged data

# Data calibration steps 1

- Raw data
  - Data Inspection
    - Flagging bad data
  - Frequency dependent calibration (bandpass cal)
    - Correct for instrumental variation
  - Time dependent calibration (gain cal)
    - Correct for atmospheric variations, opacity and phase delay
  - Flux calibration
    - Ratio with sources of known flux, planets & their moons
- Calibrated data

## Data calibration steps 2

- Calibrated data exists in the aperture plane and is related to the image by a Fourier transform
  - Fourier transform mapping
  - Deconvolution of beam pattern (cleaning)
- Imaged data
  - 3D data RA, declination, frequency
  - FITS format
  - Can be read by common software such as DS9

## SMA data products

- Raw data                      2002            -- > present
- Calibrated data              2008            -- > 1 week delay
- Imaged data                 Apr 2008    -- > July 2008
  - Currently imaging 1 year of data every few months
- Data is publicly available for download after 15 months proprietary period

Data is archived in our RTDC  
follow link from the SMA home page

<http://www.cfa.harvard.edu/rtdc/data/search.html>

- Query form to search the archive by RA and Decl.
- List of SMA observations
- Sample images (for imaged data)
- Data products

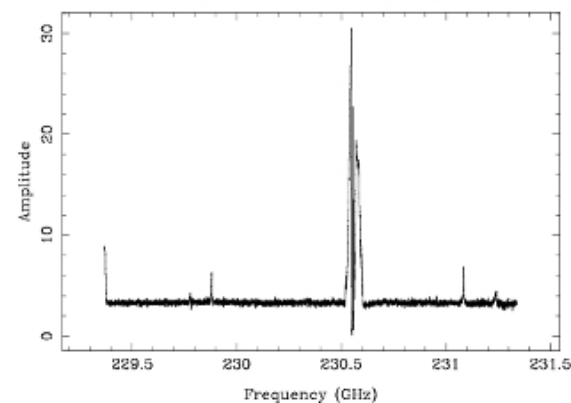
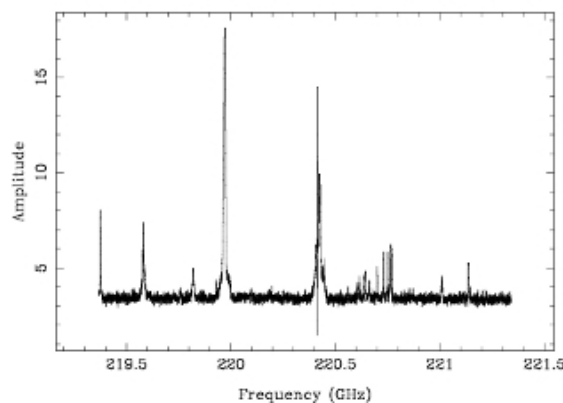
# Radio Telescope Data Center

Smithsonian Astrophysical Observatory

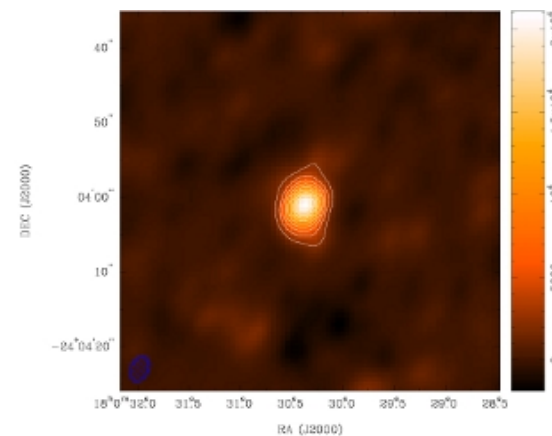
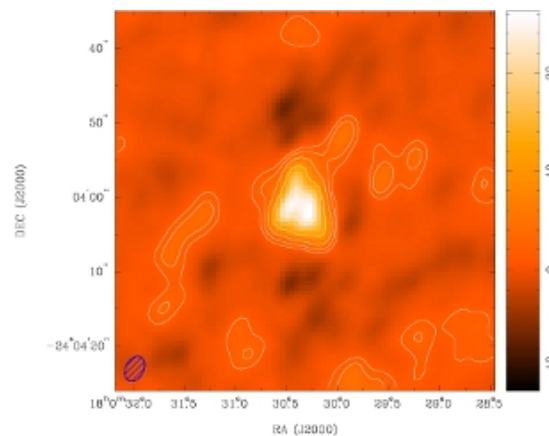
Extremely High-Velocity Outflowing Gas toward the Massive Young Star G5.89-0.39

Yu-Nung Su 2007B-A007 04/18/2008  
g5.89

Sample  
images



**Spectra: Lower Sideband (left) and Upper Sideband (right).** Spectra are constructed from all positively weighted data: all times, all baselines. Amplitude units are Jy/beam.









# Downloadable data sets

Index of /rtdc/download/080418\_091932\_g5.89

7/5/11 11:00 PM

## Index of /rtdc/download/080418\_091932\_g5.89

<u>Name</u>	<u>Last modified</u>	<u>Size</u>	<u>Description</u>
 <a href="#">Parent Directory</a>	29-Jun-2011 13:12	-	
 <a href="#">CAL/</a>	24-Jun-2011 17:39	-	
 <a href="#">IMG/</a>	24-Jun-2011 17:40	-	
 <a href="#">RAW/</a>	23-Jun-2011 17:44	-	

SMA offers support and assistance ranging from simple technical advice to collaboration

- Contact anyone on the SMA staff