

2018 ALMA Summer School

Hands-on 2

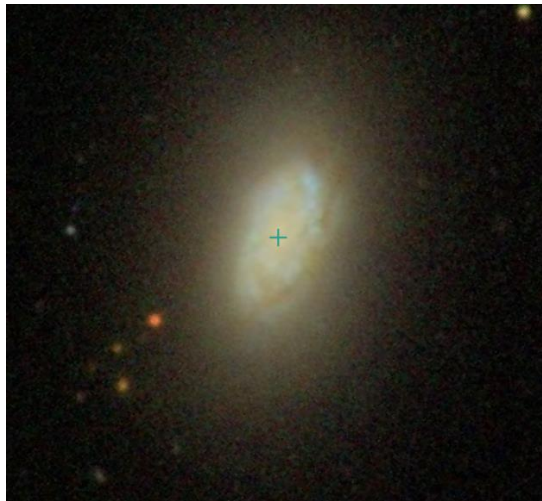
Advisor : 오세헌

김형한, 안성호, 유다솔, 최우락

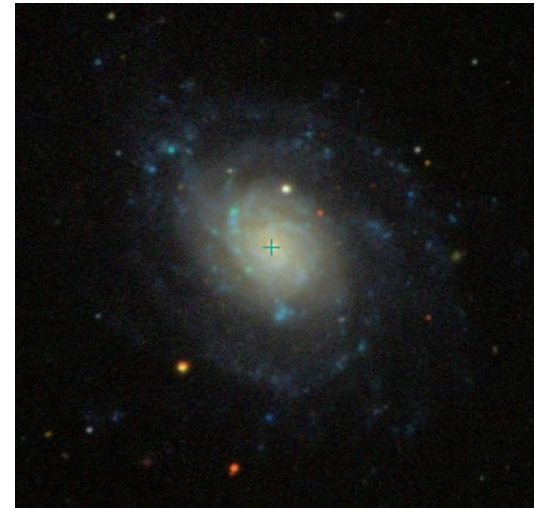
Hands-on 2

Kinematics of gas in nearby dwarf galaxies

NGC 4451

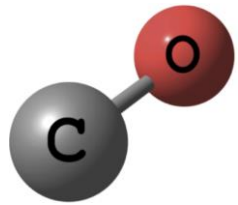


NGC 4701



RA	285.1222	301.5406
Dec	71.3393	66.2544
Redshift	0.00262	0.00251
Angular resolution	2'' (~ 150 pc)	

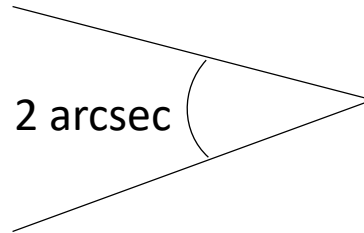
ALMA Data



115.27 GHz



2 arcsec



12 m x 40



84-116 GHz

Band3



937.50 MHz

Channel

244.141 kHz (0.637 km/s)

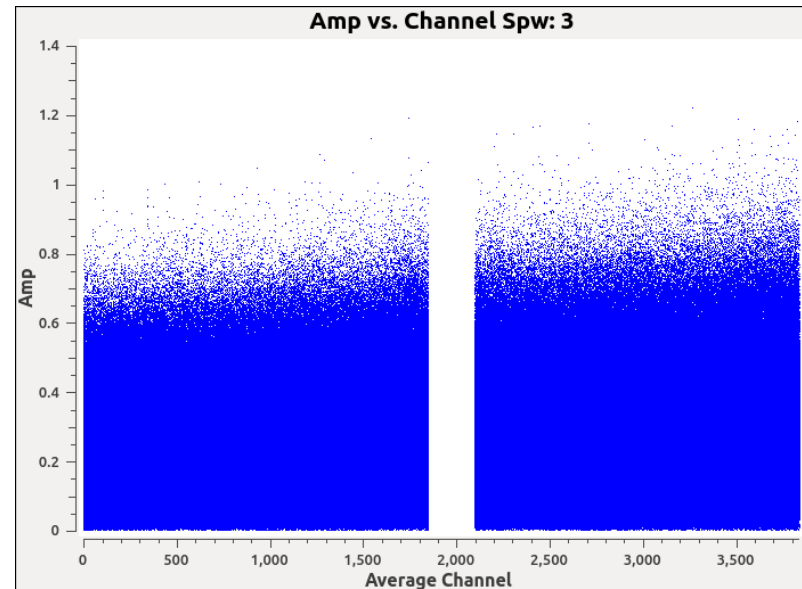
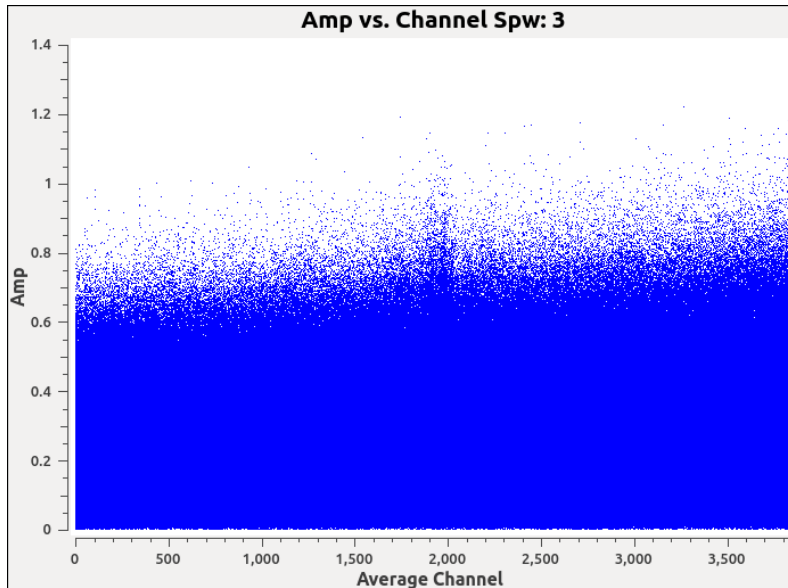
x

3840

Date	2016.01.03
RMS	6.6 mJy
Observation time (elapsed time)	~ 500s

Data Reduction

1. Flagging

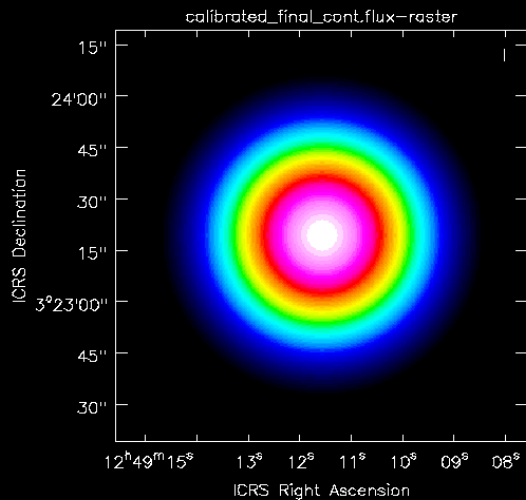


2. Average the channels within spectral window

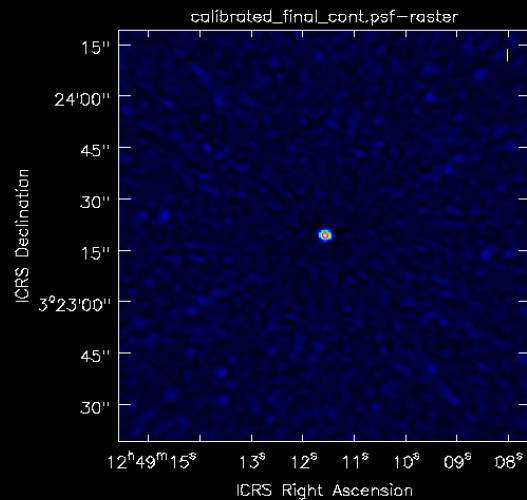
Data Reduction

3. Imaging the continuum - clean

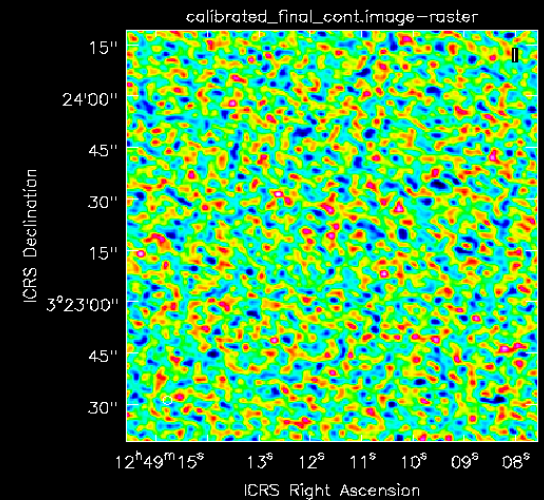
Flux



PSF

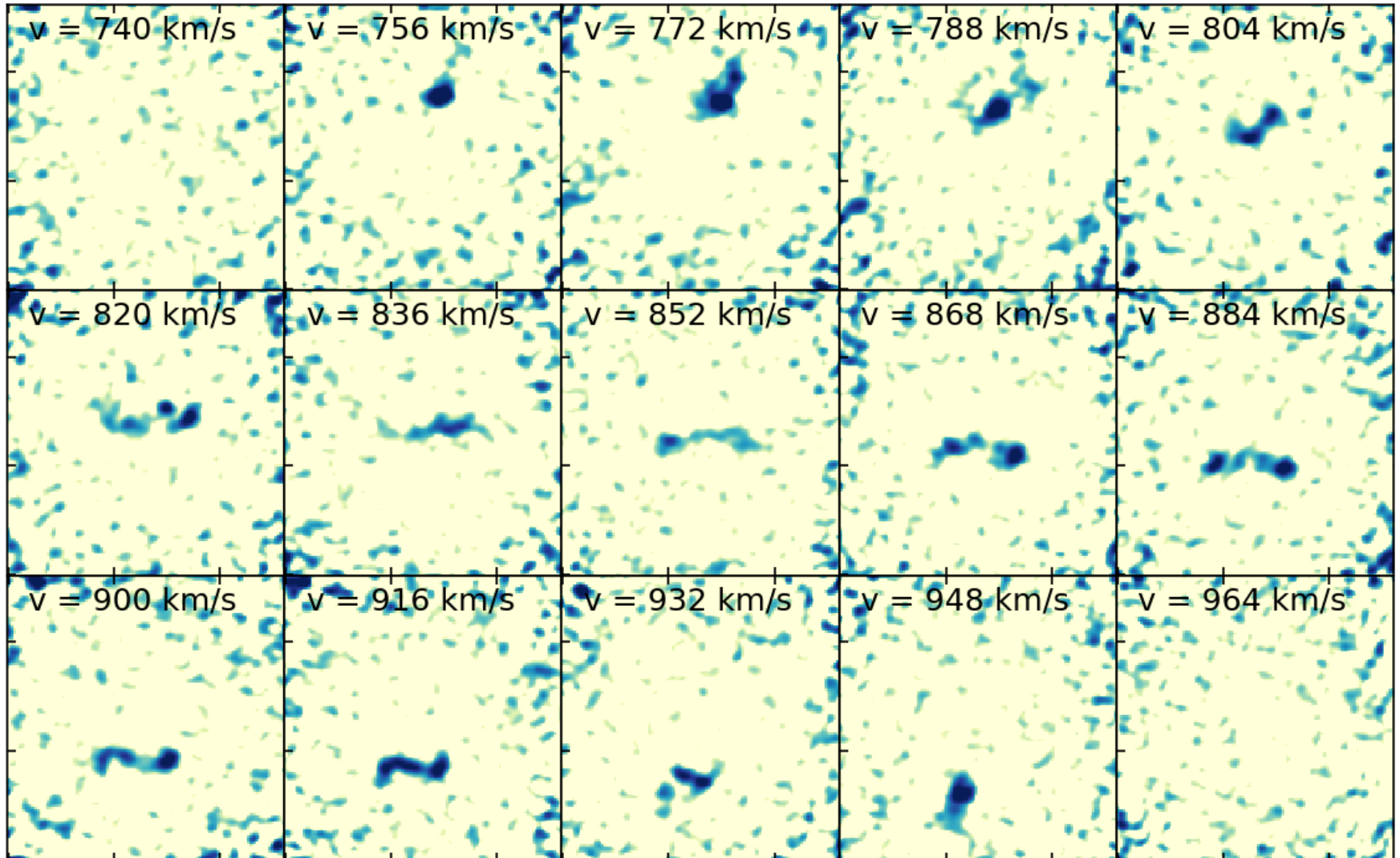


Image



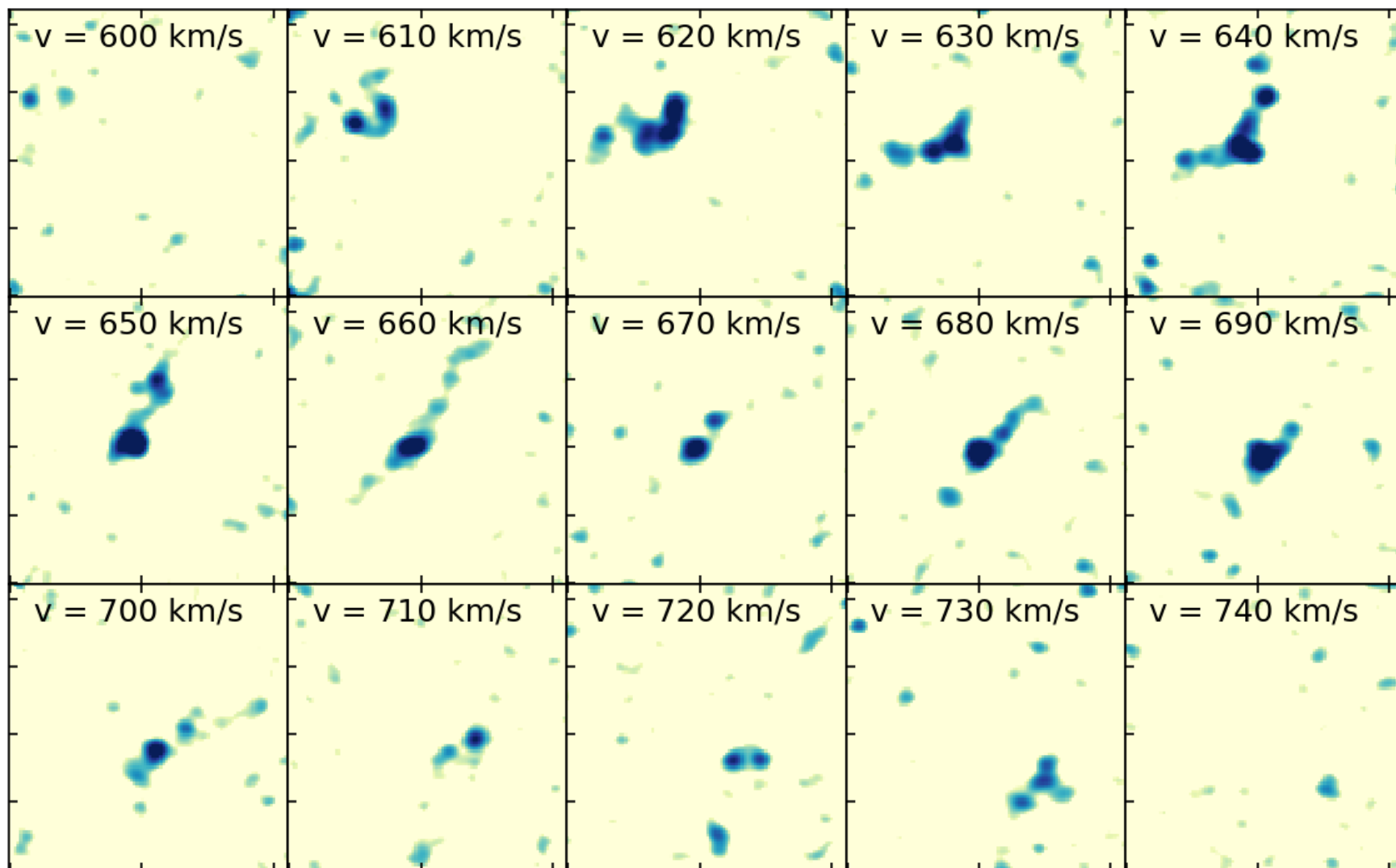
Channel Map

NGC 4451



Channel Map

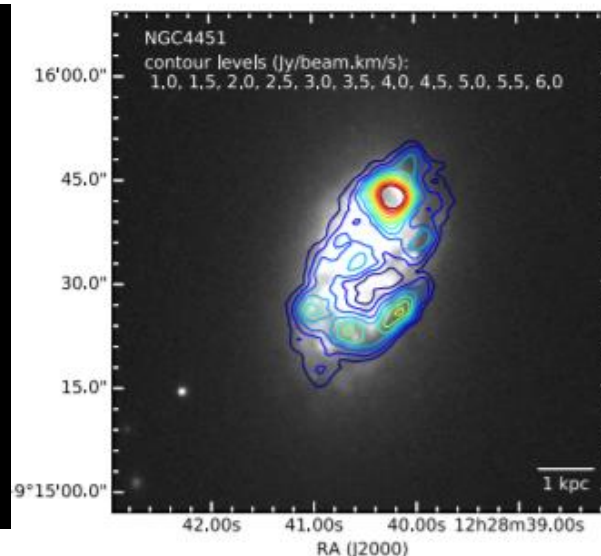
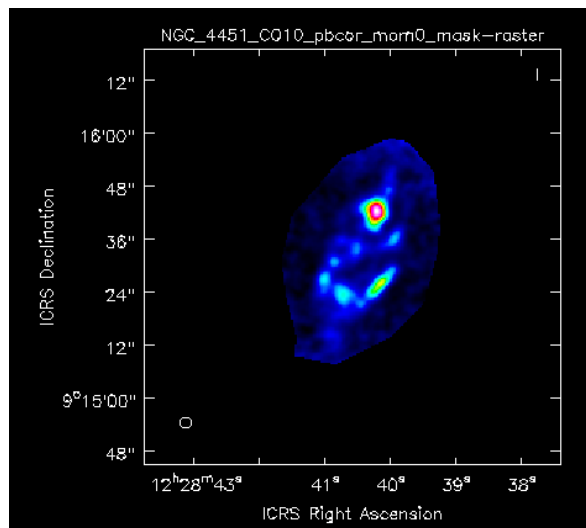
NGC 4701



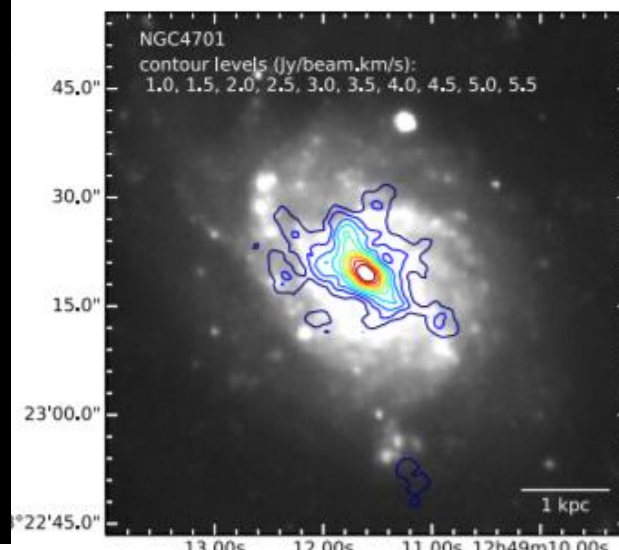
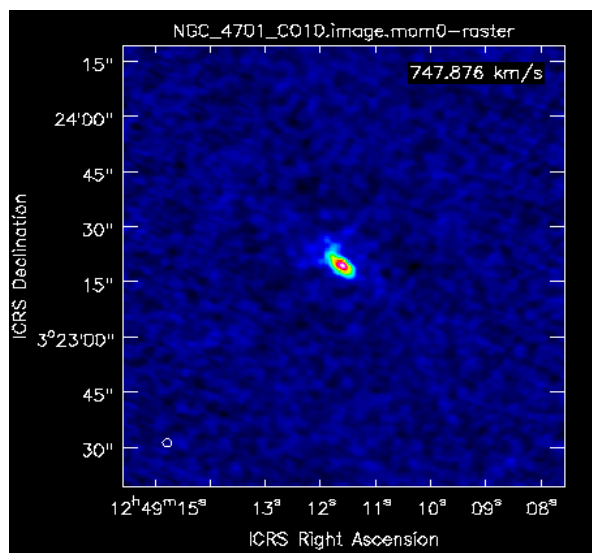
Analysis

Moment 0 map comparison

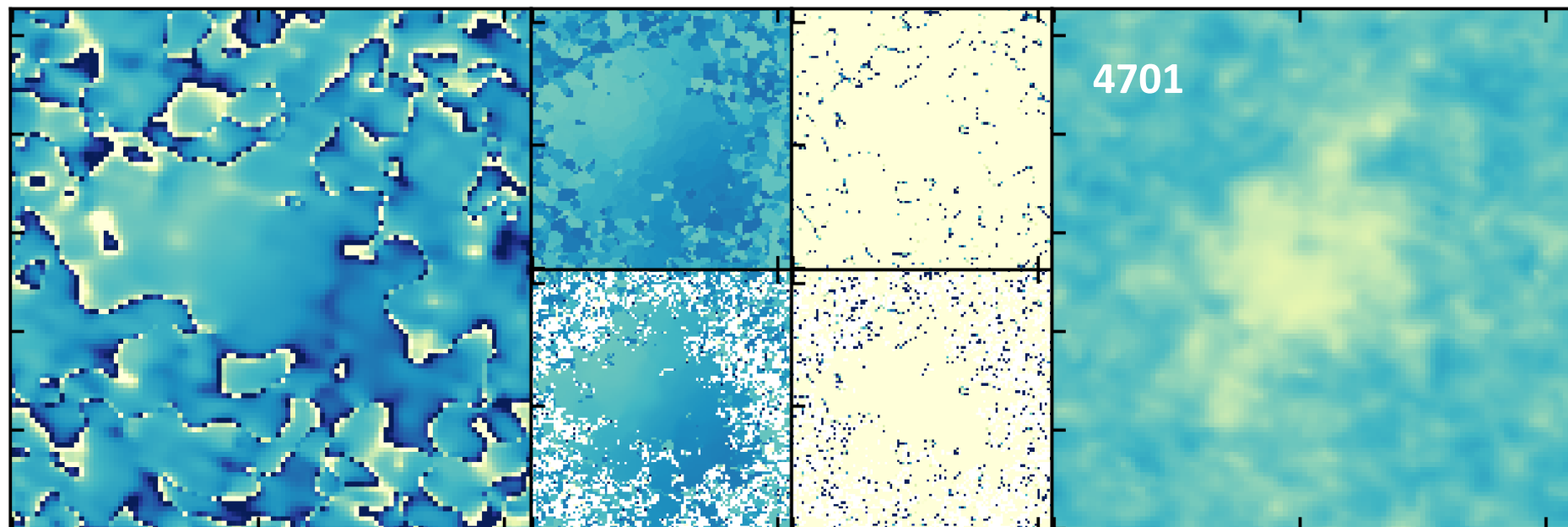
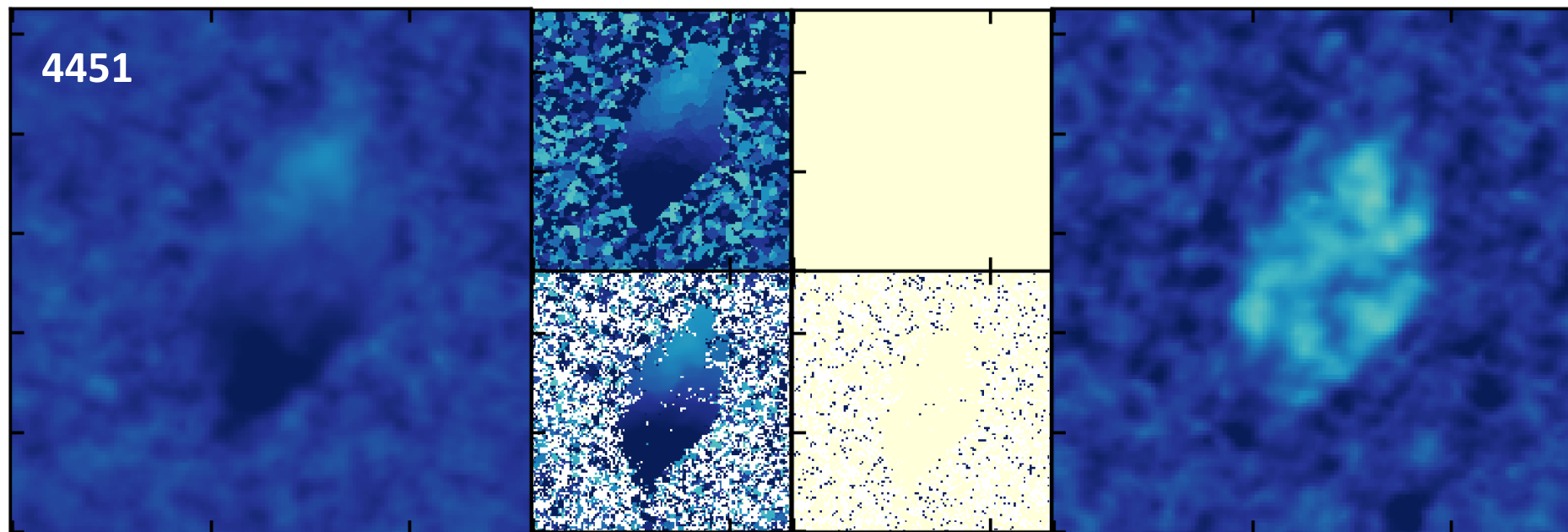
NGC 4451



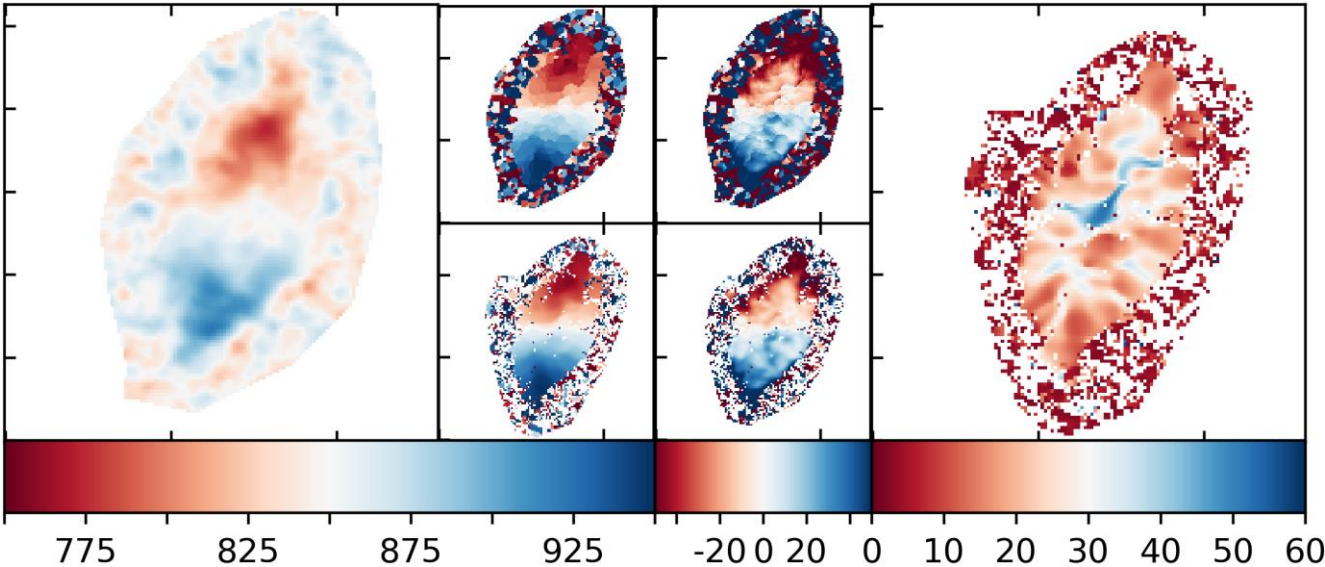
NGC 4701



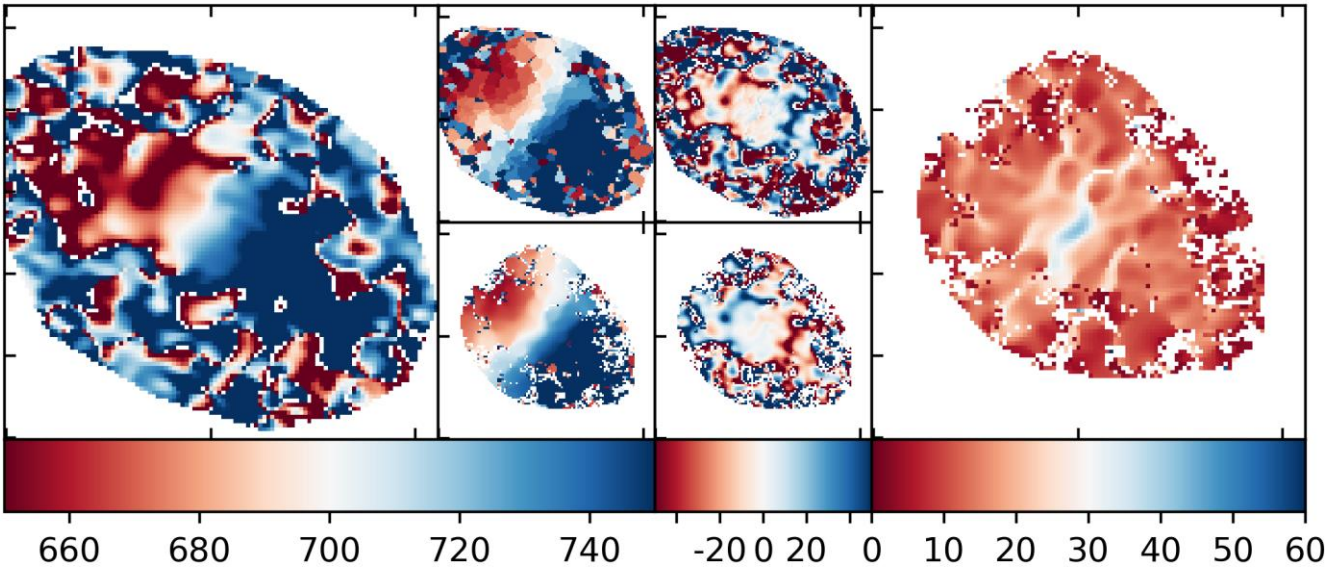
(Truong +17)



NGC 4451



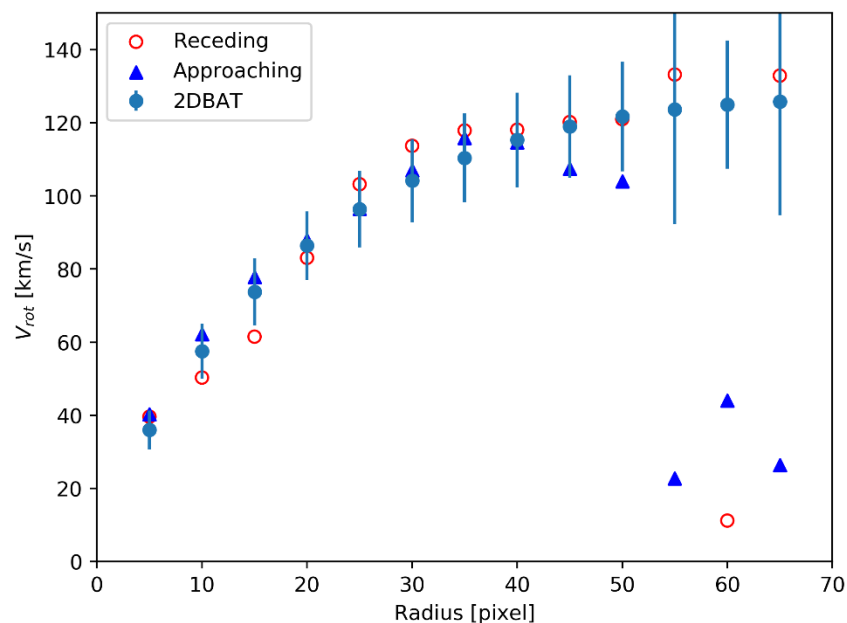
NGC 4701



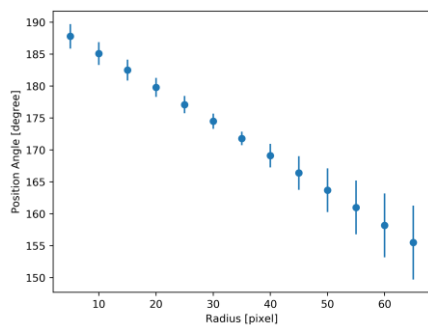
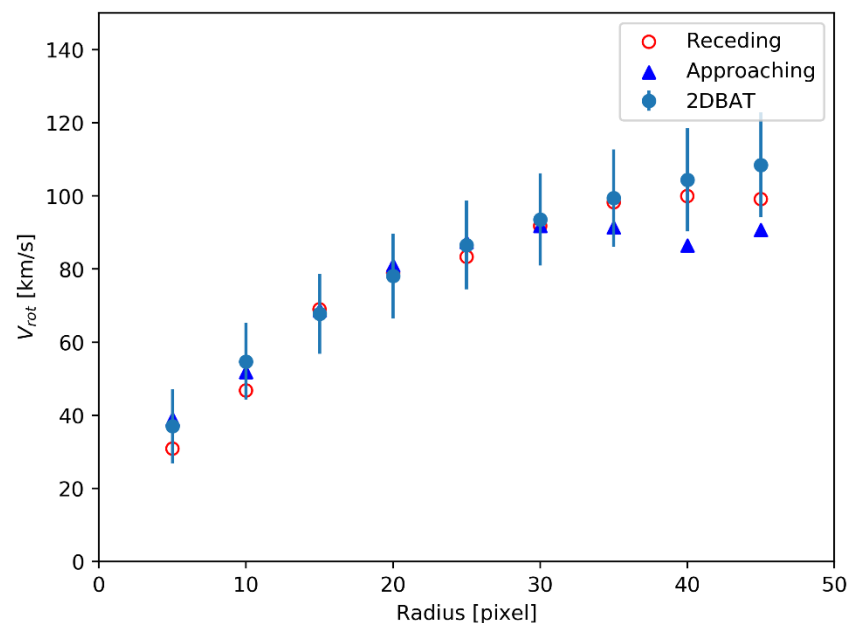
Moment 1 (Immoments)	Mom 9	Mom 9 - Mom 1	Moment 2
	Gaussian fitting (1)	Gaussian - Mom 1	

Analysis - 2DBAT

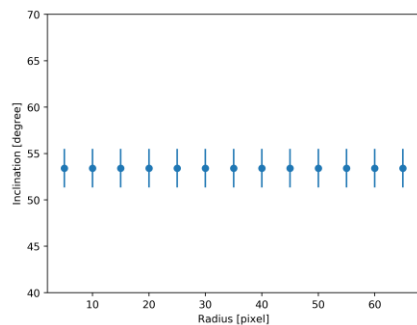
NGC 4451



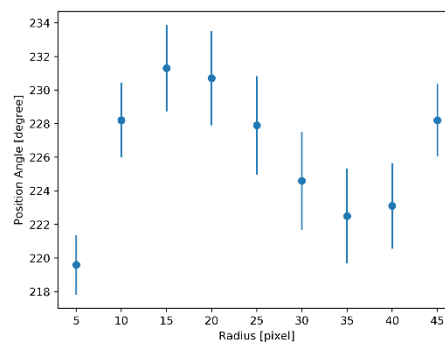
NGC 4701



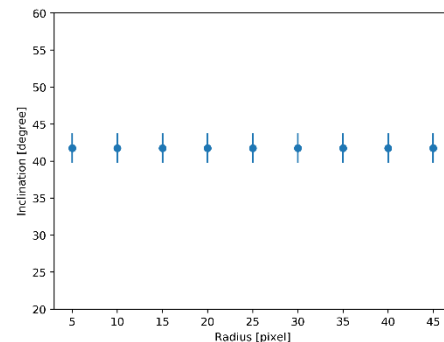
P.A.



Incl.



P.A.

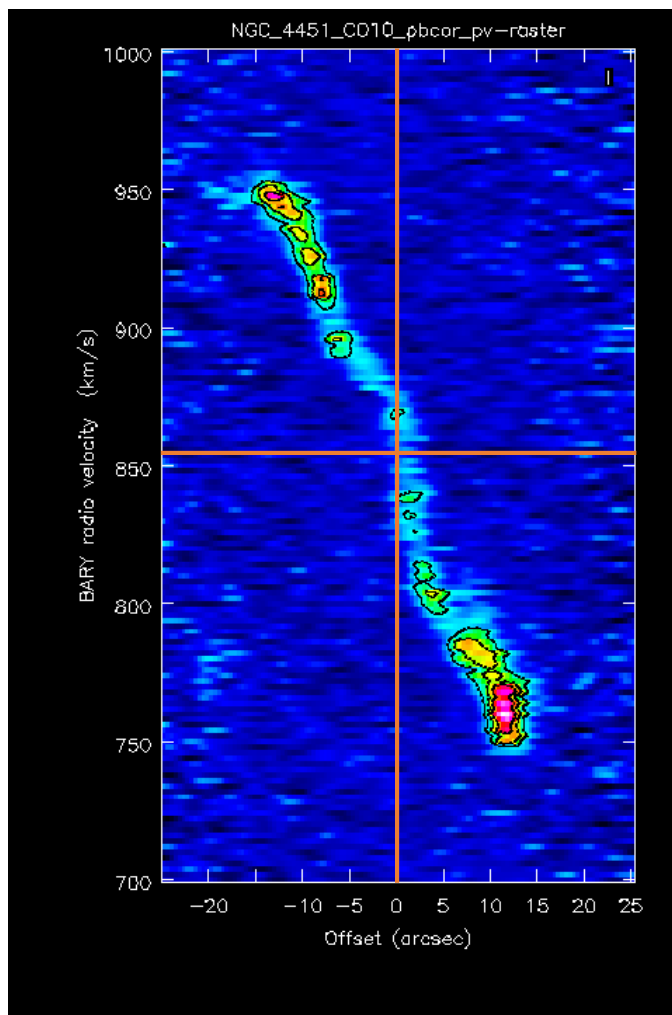


Incl.

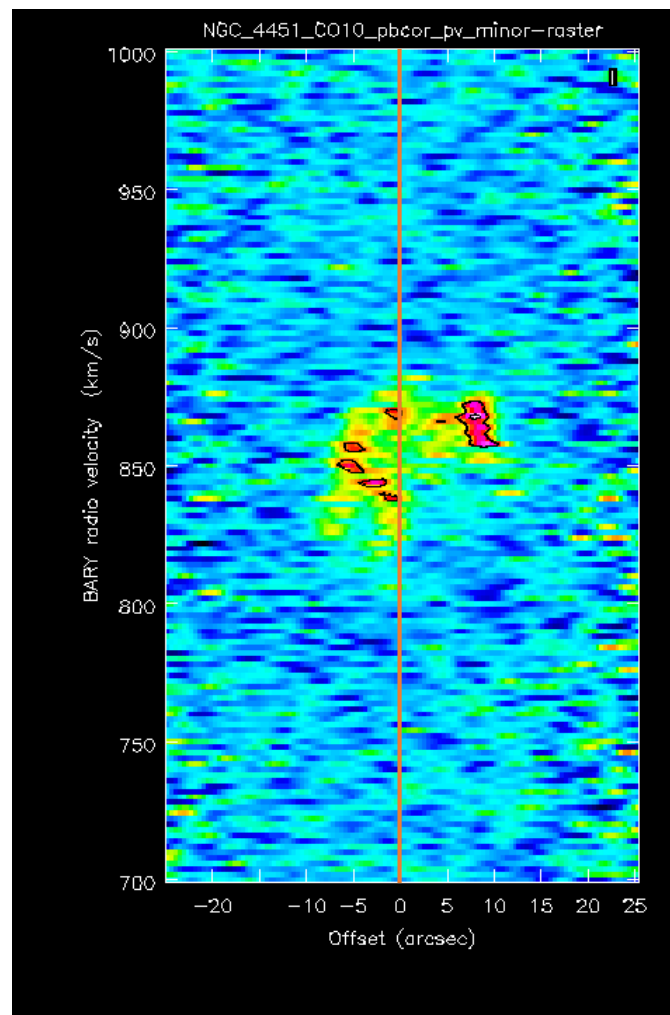
Analysis

PV diagram- NGC 4451

Major axis



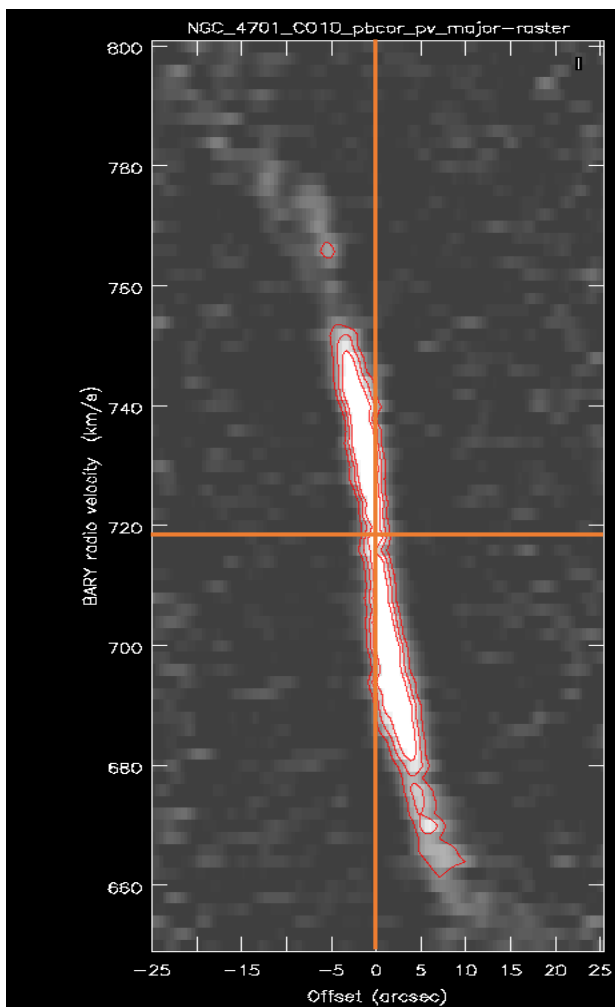
Minor axis



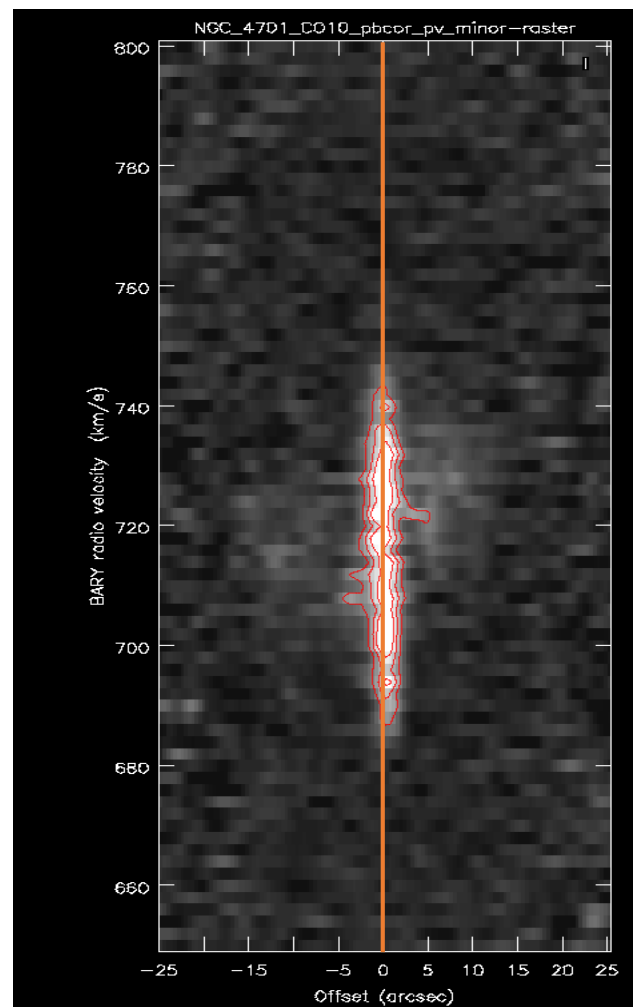
Analysis

PV diagram – NGC 4701

Major axis



Minor axis



Discussion

- Limitation of CO (1-0) line detection : HI & H α
- Moment 1 map production : immoments, Gaussian fitting(specfit), peak velocity(Mom.9)
- Kinematics

Thank you

Special thanks to 소백산 셰프님들