Preliminary Imaging Result for G19.61 using ParselTongue Pipeline

2019 East Asian VLBI Workshop

2019.09.26

Eodam Hwang

Star Formation sub-Working Group

Understanding to high-mass star formation process

↓

Dynamical evolution

↓

Circumstellar structure

↓

3-Dimensional velocity field of masers

↓

Proper motion of masers

↓

Monitoring observation

Observation

Code	Time (UT)	Band	PI	Title	Mode
k19th05a	2019-09-11 05:55 ~ 2019-09-11 13:15	K22GHz,Q43GHz	Tomoya Hirota	KaVA SFR LP 2018 K-5:G354.61:I18018:I20198	Edit Vie w / Pop
k19th04d	2019-09-09 06:35 ~ 2019-09-09 14:35	Q43GHz	Tomoya Hirota	KaVA SFR LP 2019 Q (G357.967 G18.34SW G49.49)	Edit Vie w / Pop
k19th04c	2019-05-09 13:36 ~ 2019-05-09 21:16	K22GHz,Q43GHz	Tomoya Hirota	KaVA SFR LP 2018 K-4:G351.24:RCW142:G49.49:W51D Corr date: **2019-09-20** Corr date: **2019-09-20** Corr date: **2019-09-20** Release: **2019-09-22** Release: **2019-09-22** Release: **2019-09-22**	Edit Vie w / Pop
k19th03b	2019-05-08 13:45 ~ 2019-05-08 21:25	K22GHz	Tomoya Hirota	KaVA SFR LP 2018 K-3:G354.61:I18018:I18056:I20198 Corr date: **2019-09-17** Corr date: **2019-09-17** Corr date: **2019-09-17** Release: **2019-09-17** Release: **2019-09-17** Release: **2019-09-17**	Edit Vie w / Pop
k19th01b	2019-04-13 15:30 ~ 2019-04-13 23:10	K22GHz,Q43GHz	Tomoya Hirota	KaVA SFR LP 2018 K-1:G10.62:G13.874:G25.82:G45.07) Corr date: **2019-07-16** Corr date: **2019-07-16** Corr date: **2019-07-16** Release: **2019-07-17** Release: **2019-07-17** Release: **2019-07-17**	Edit Vie w / Pop
k19th02b	2019-04-09 16:35 ~ 2019-04-10 01:00	Q43GHz	Tomoya Hirota	KaVA SFR LP 2019 Q Corr date: **2019-07-15** Corr date: **2019-07-15** Release: **2019-07-18** Release: **2019-07-18**	Edit Vie w / Pop

30 observations from second year

Necessity of Pipeline

- Large amount of data
- 2 observations / month

- Complicated & Repeated process
- required so many time

- Limited resource
- Reduce the data reduction time

ParselTongue

http://www.jive.eu

- ParselTongue is an interpreter that allows Python to understand AIPS
- The pipeline is based on python

Pipeline ← Python ⬌ AIPS

ParselTongue
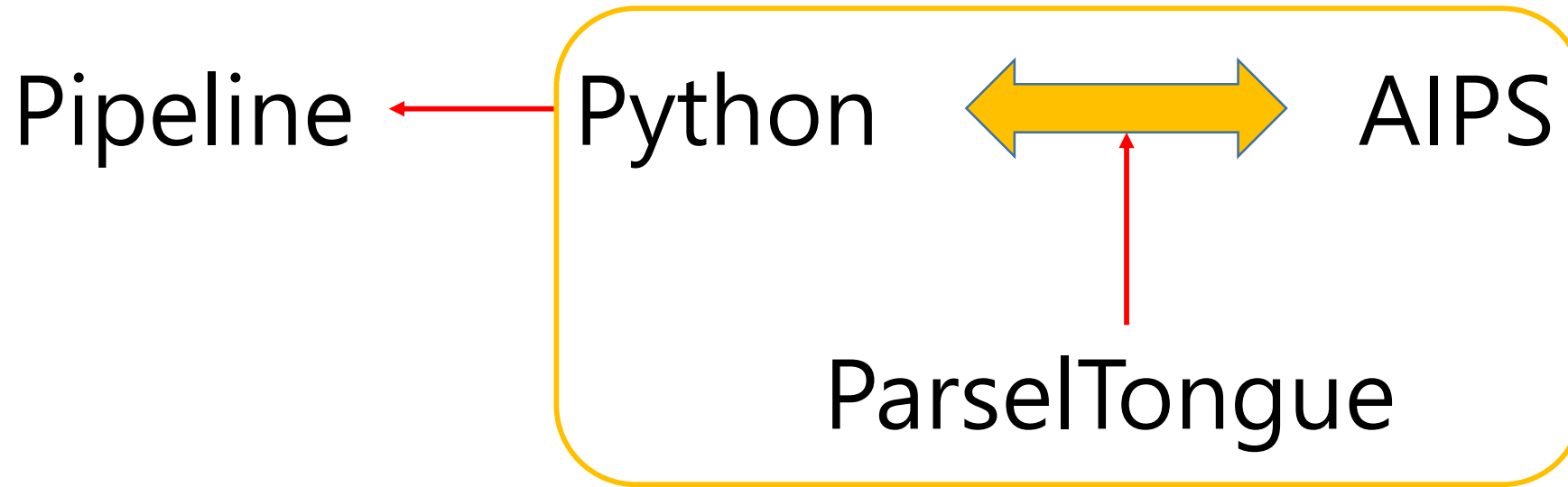
KVN Pipeline

- KVN pipeline is developed by Dr.Yun (Youngjoo) in KASI

- For KVN 3 stations

- For maser of evolved star

- For SFPR (Source Frequency Phase Referencing) method

KVN Pipeline

▪ KVN pipeline is developed by Dr.Yun (Youngjoo) in KASI

- For KVN 3 stations ⟶ expand to fit KaVA data

- For maser of evolved star ⟶ For Star-Forming Regions

Difference of Scale and MASER distribution

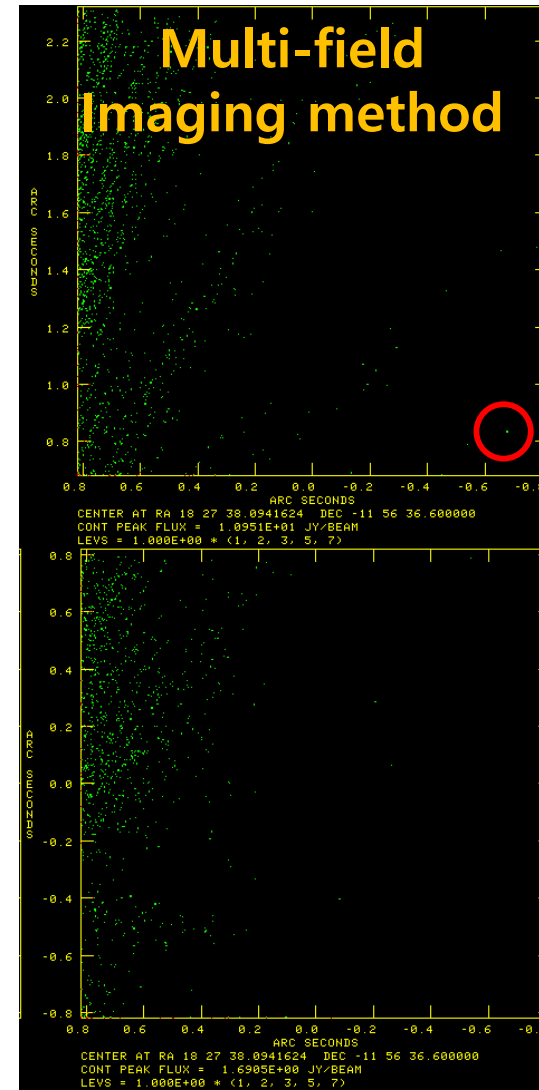- For SFPR (Source Frequency Phase Referencing) method

Imaging method
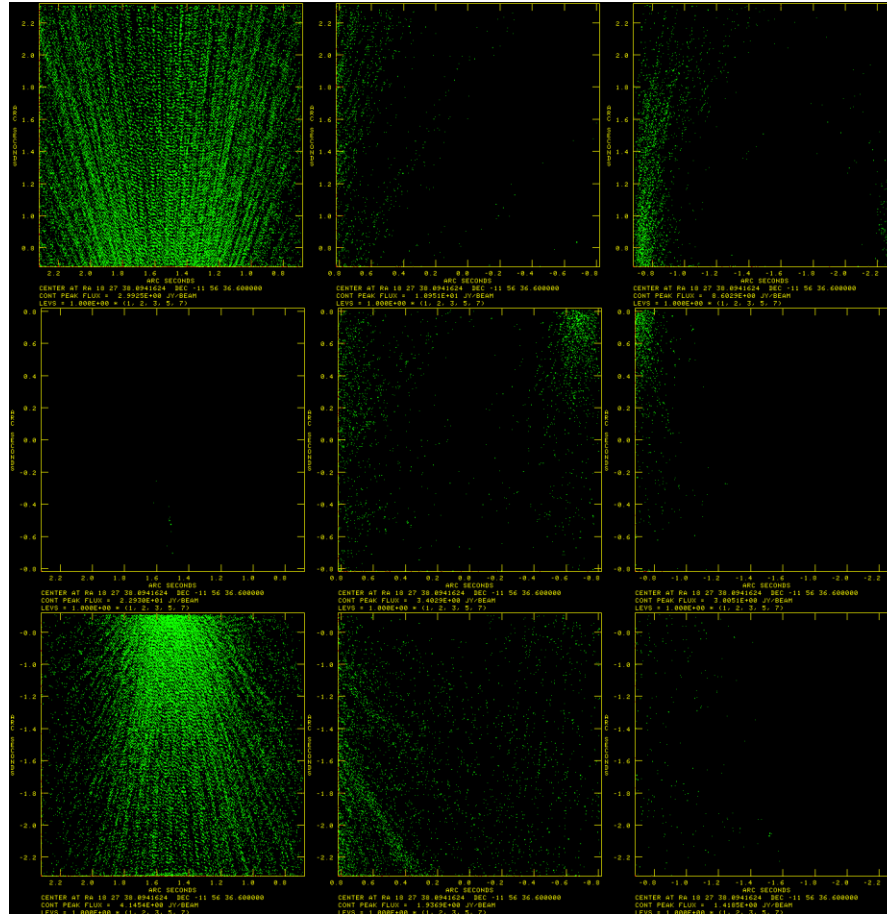
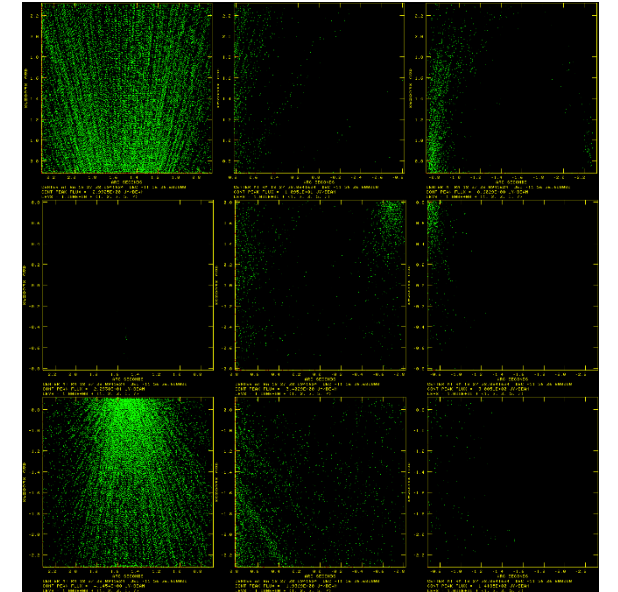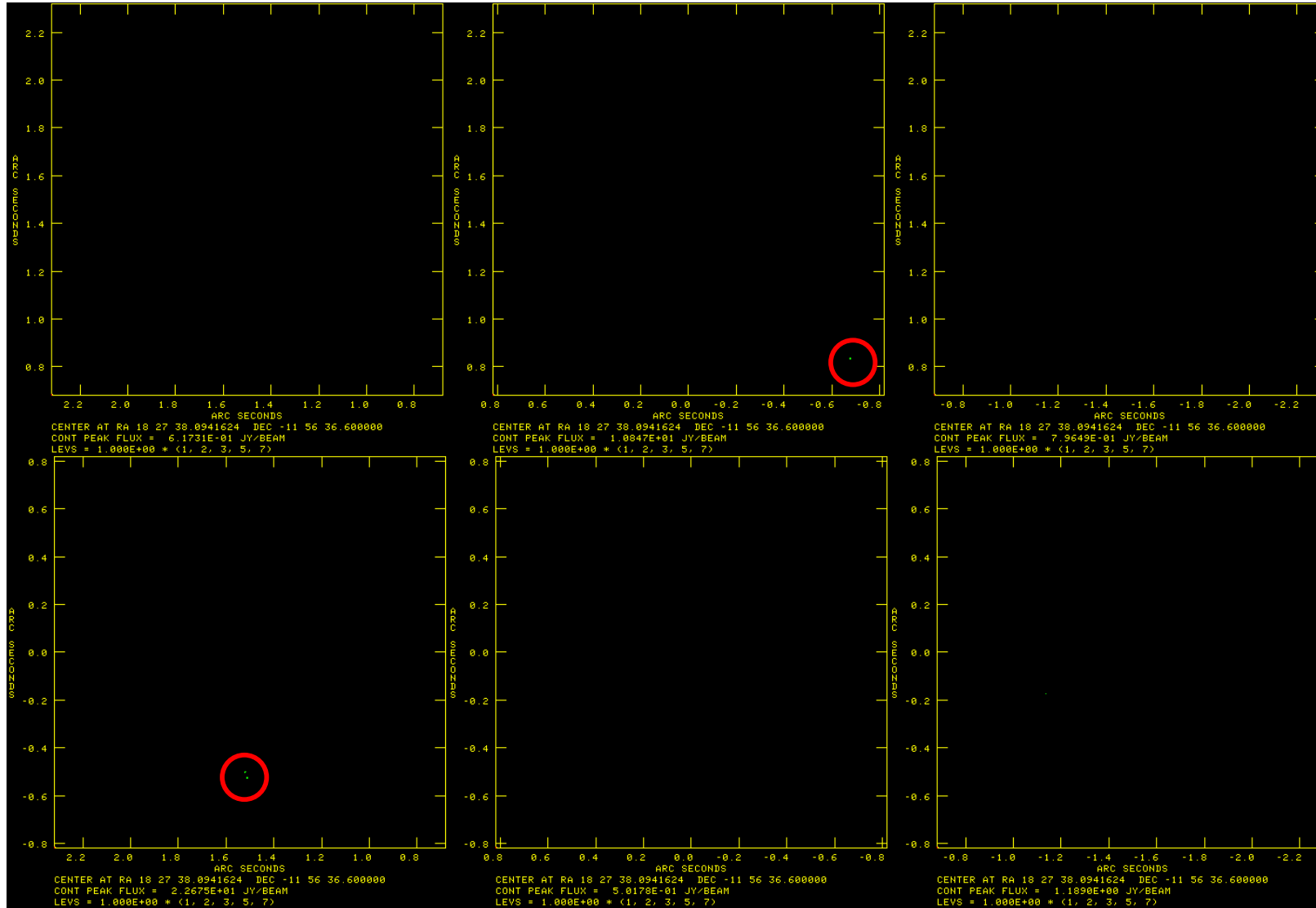**Single field images include strong sidelobe contamination**

Imaging method comparison

Single-field imaging method
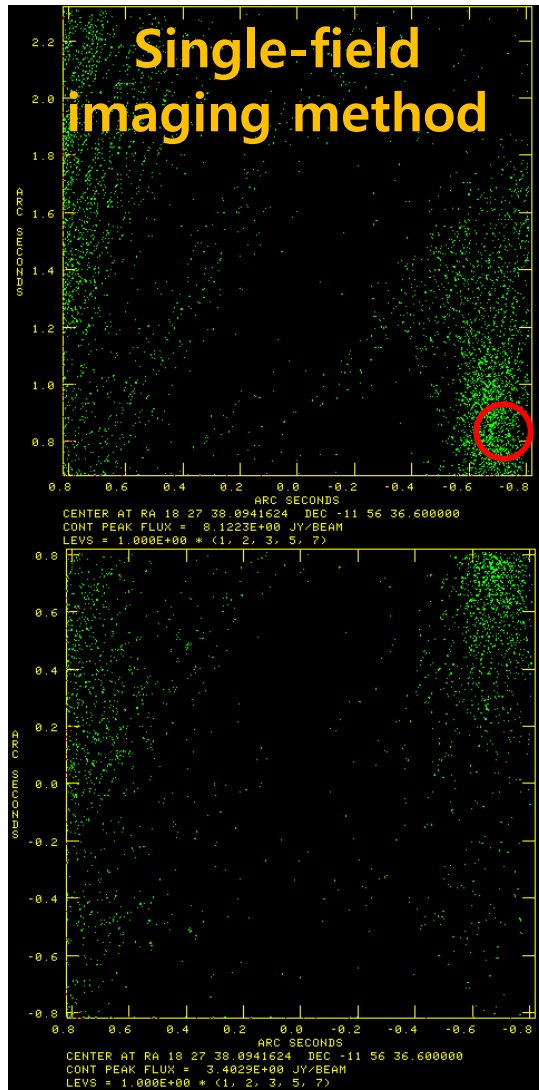
can not detect strong component

Multi-field Imaging method

red circle: strong component (~9Jy)

Imaging method comparison

Pipeline Structure for SFRs

Basic Calibration
- FITLD
- MSORT
- ANTAB
- ACCOR
- APCAL
- BPASS
- PANG
- EOPS
- TECOR

Fringe Fitting
- FRING (Dummy)
- Find scan
- FRING (Instrumental)
- SETJY
- CVEL
- Find peak channel
- FRING (Line)

Imaging
- Get cellsize (beam/4)
- Get imsize (FRMAP)
- IMAGR (Multi-Field)
- SAD
- Plot maser map

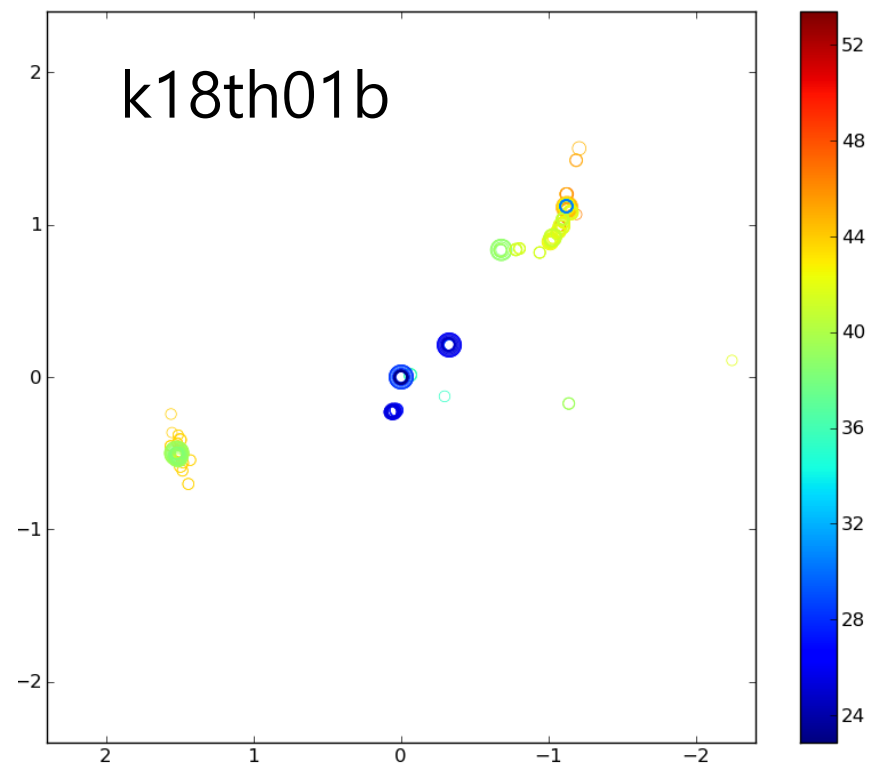Need to modify

Currently not available
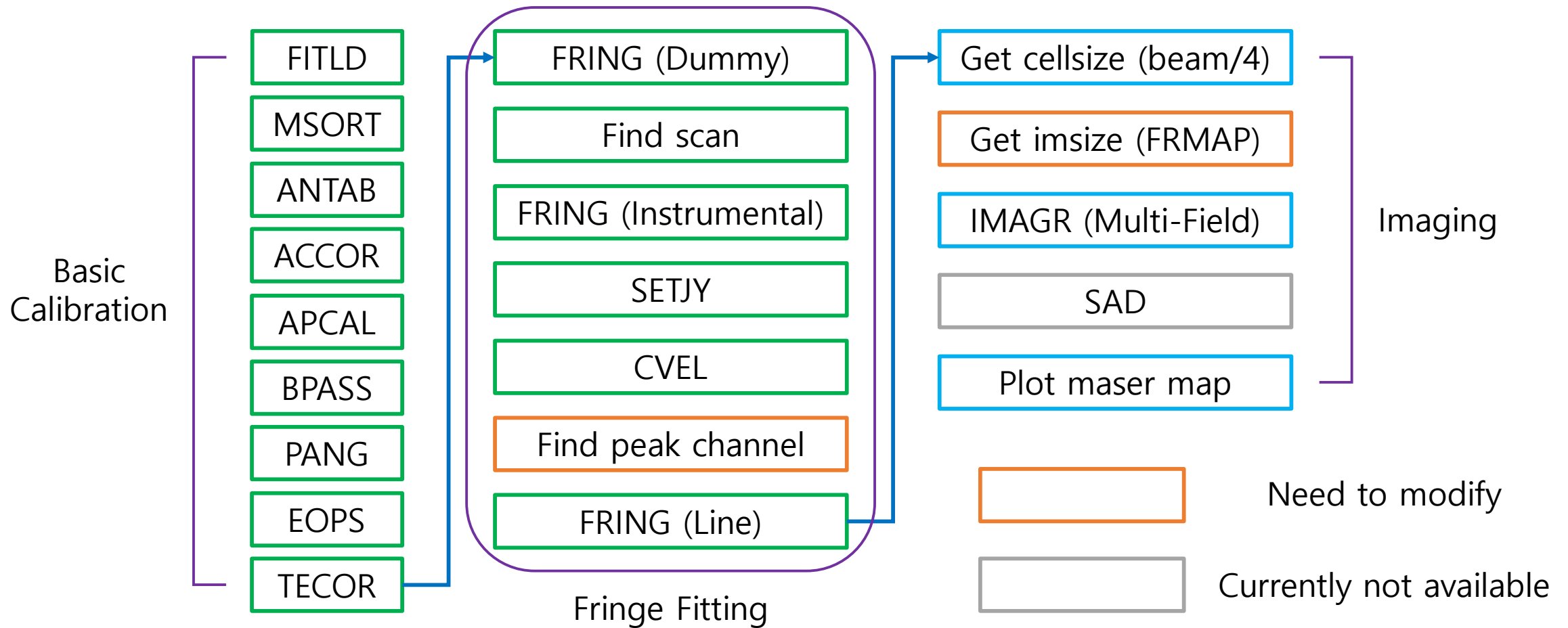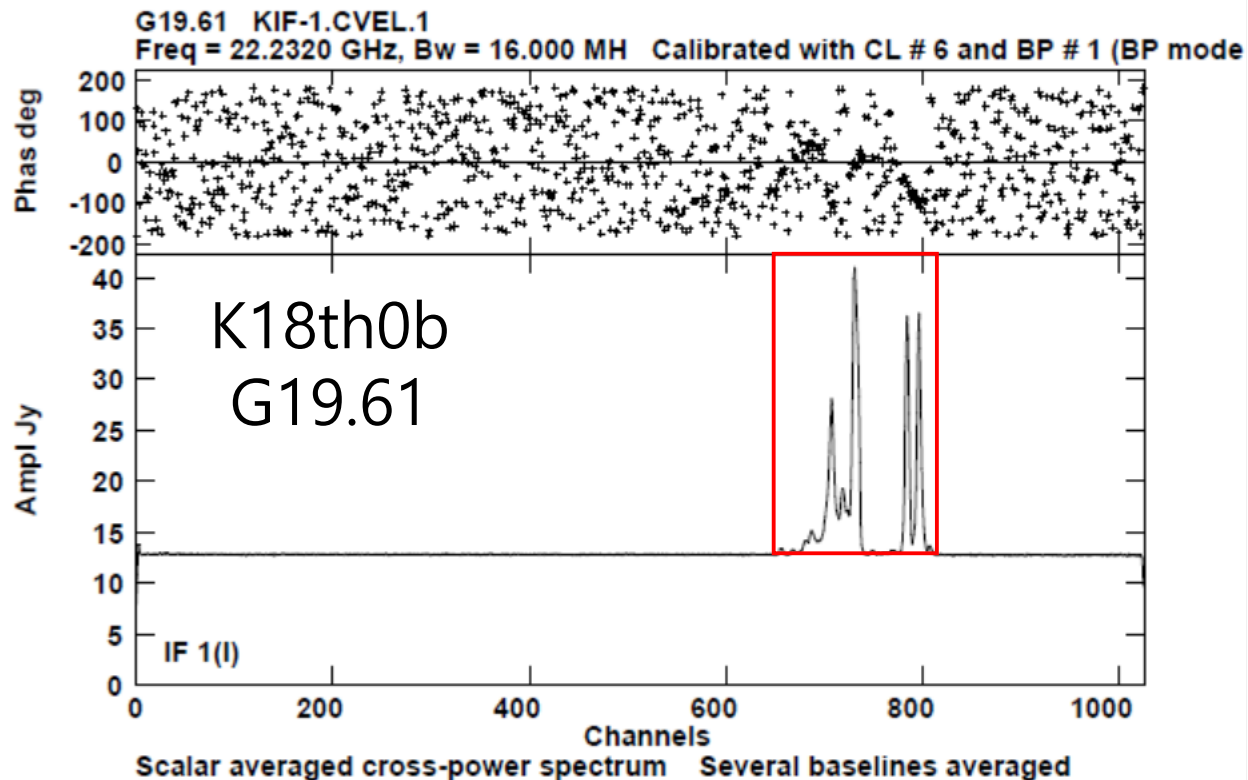
Image comparison (Manual VS Pipeline)
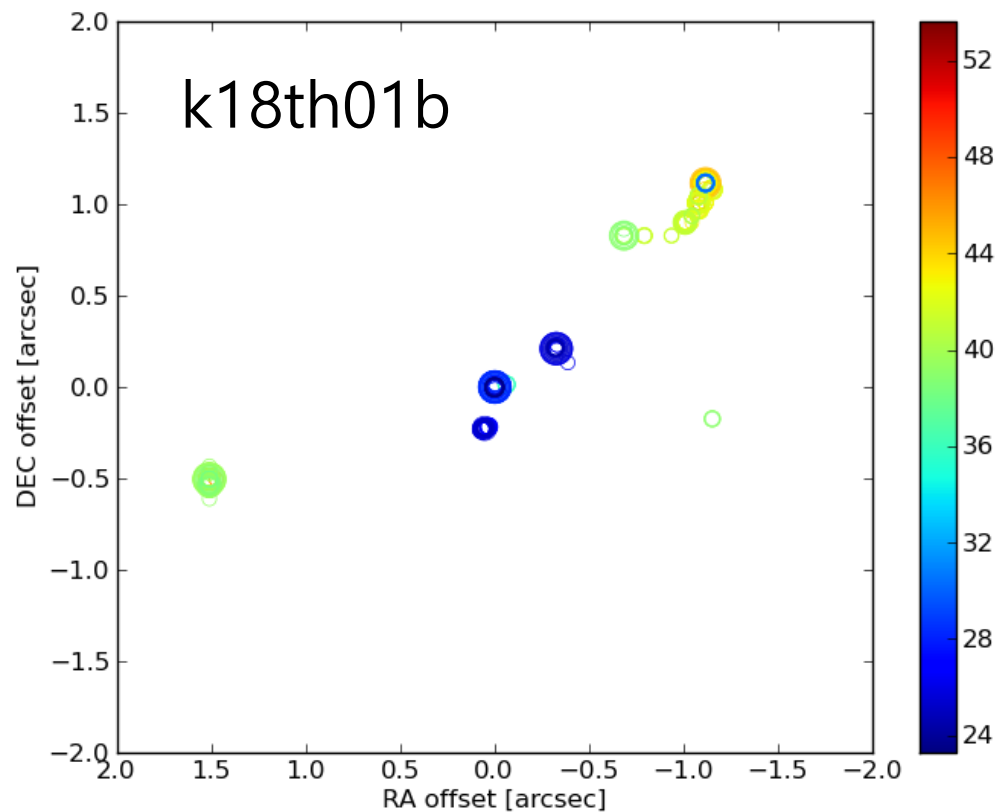
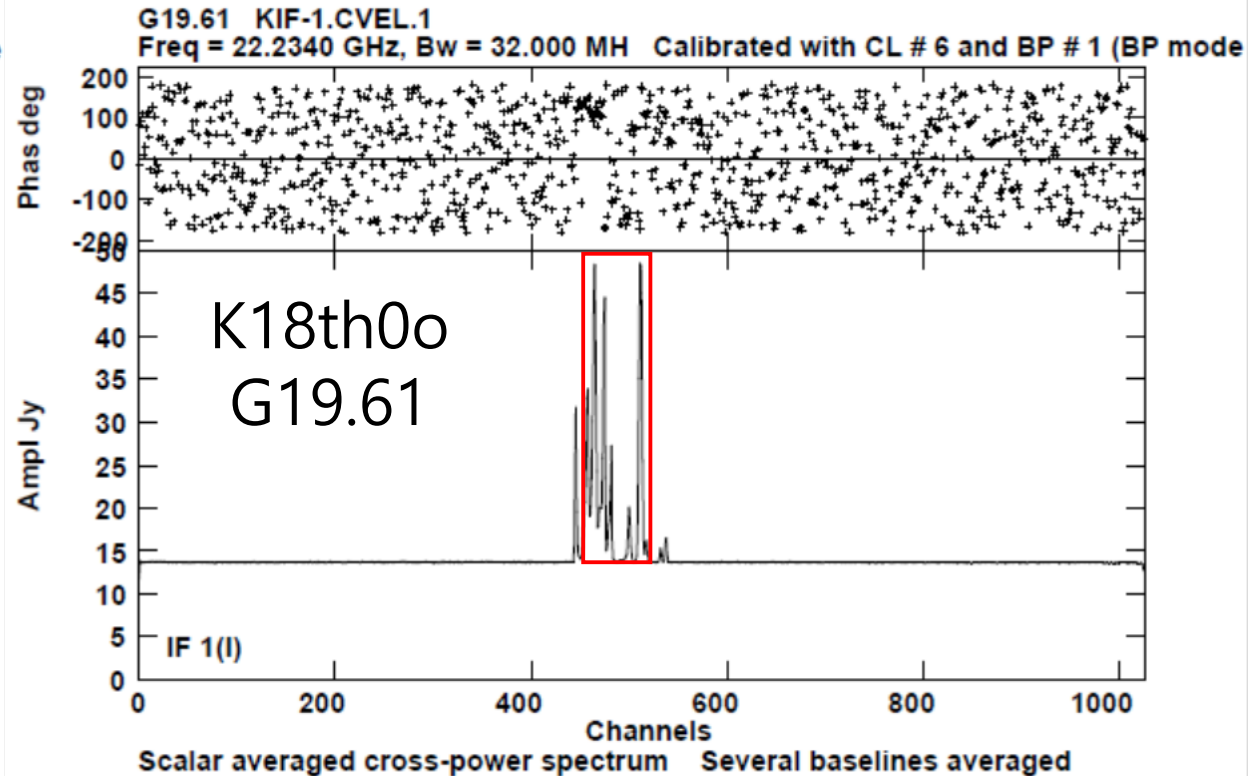Maser map of Manual data reduction

Maser map using Pipeline

Find Line Peak & Channel

Found Line Window: 663-809ch

Found Line Window: 450-515ch

Summary

- Need to more efficient data reduction for many data set

- Pipeline is well working in current data set.

- Pipeline has some bug in some data set.

- Need to modify for find line channel.