Preliminary Imaging Result for G19.61 using ParselTongue Pipeline

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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

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<tr>
<th>Code</th>
<th>Time (UT)</th>
<th>Band</th>
<th>PI</th>
<th>Title</th>
<th>Mode</th>
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<td>2019-09-09 05:35 – 2019-09-09 14:35</td>
<td>Q43GHz</td>
<td>Tomoya Hirota</td>
<td>KaVA SFR LP 2019 Q (G357.967 G18.34SW G49.48)</td>
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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

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

Red circle: strong component (~9Jy)

**Multi-field Imaging method**

Can not detect strong component
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

K18th0b
G19.61

Found Line Window: 663-809ch

K18th0o
G19.61

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.