



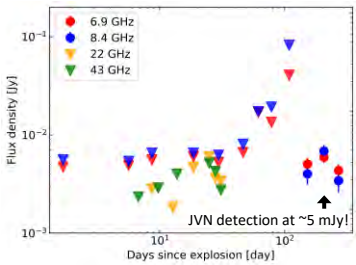


Yamaguchi 34m & 32m

Takahagi 32m

Hitachi 32m

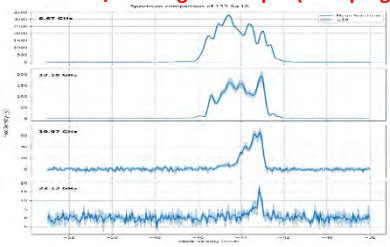
Supernova follow-up: SN 2023ixf



- ✓ Radio follow-up of nearby (~6.9 Mpc) SN 2023ixf using JVN (Ibaraki?Yamaguchi), VERA, and KVN.
- ✓ JVN detected radio emission at 6.9 and 8.4 GHz about 150 days after the discovery.
- ✓ Suggests a possible enhancement of mass-loss activity within ~30 years before the explosion.

Iwata et al. (2025), ApJ, 978, 138

Methanol maser monitor @ 6, 12, 20, 23 GHz at Hitach/Takahagi telescopes (iMet program)



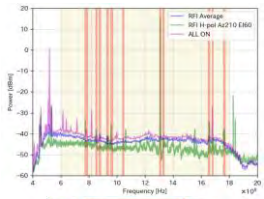
Monitoring over 400 methanol maser sources with publicly available online data (iMet Program).

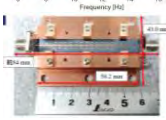
Through iMet program:

- ✓ Periodic variability has been discovered on both very short (~20 days) and very long (~1000 days) timescales.
- ✓ Accretion burst in high-mass protostars have been discovered.

Development of broadband cm-wavelengths receiver







HTS multi-band rejection filter

Ultra Wide-band receiver for 6 - 18 GHz observation

- ✓ Quad-ridge feed horn for bandwidth ratio of 1:3
- ✓ Multi-band rejection filter developed on High-temperature superconductor with low insertion loss & Steep cutoff


Gifu 11m


Usuda 64m


Yamaguchi 34m


VERA Mizusawa 20m


Yamaguchi 32m

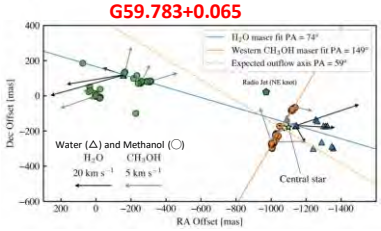

Ibaraki 32m x2


VERA Ishigaki 20m


VERA Iriki 20m


VERA Ogasawara 20m

Accretion system of a high-mass young stellar object G59.783+0.065



Distribution and motion of water and methanol masers in G59.783+0.065 observed by JVN (Nakamura et al. 2023)

- ✓ Existence of an accretion disk and outflow
- ✓ Methanol masers are also associated with the outflow

Japanese VLBI Network (JVN)

Kenta Fujisawa (Yamaguchi University)
kenta@yamaguchi-u.ac.jp

Outline of JVN

- Collaboration Network of 6 Universities and Research Institutes since 2005
  - NAOJ (VERA)
  - Ibaraki, Tsukuba, Gifu, OMU, Yamaguchi, Kagoshima University, and JAXA
- Array
  - 10 telescopes (11m ~ 64m)
  - Baseline 50 - 2300 km
  - Frequency 6/8/22 GHz
  - Sensitivity 3 mJy (6/8 GHz, Ibaraki-Yamaguchi)
  - Operation 200 – 300 hr/yr, 30 observations/yr
- Key features
  - ✓ Flexible operation
    - JVN is totally operated by universities
    - Antenna operation, Correlation, etc
  - ✓ Good sensitivity
    - Ibaraki (Hitachi & Takahagi 32m)
    - Yamaguchi (32m & 34m)
    - Detection sensitivity 3 mJy (6/8 GHz)
  - ✓ Short baseline
    - Total flux density observation by Yamaguchi 32m-34m baseline of 108 m