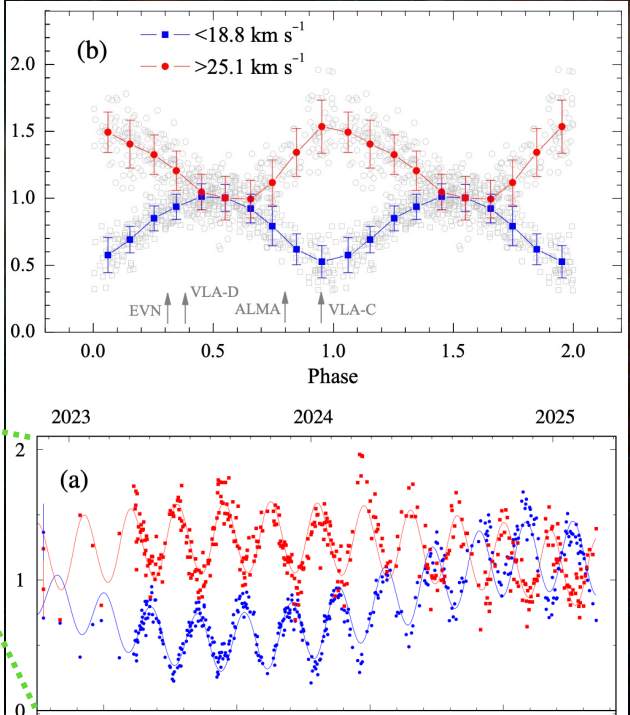
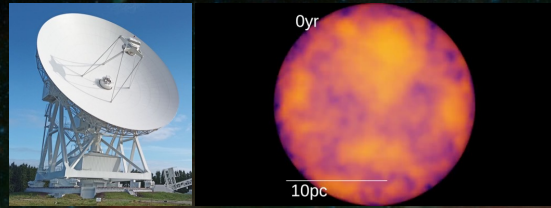
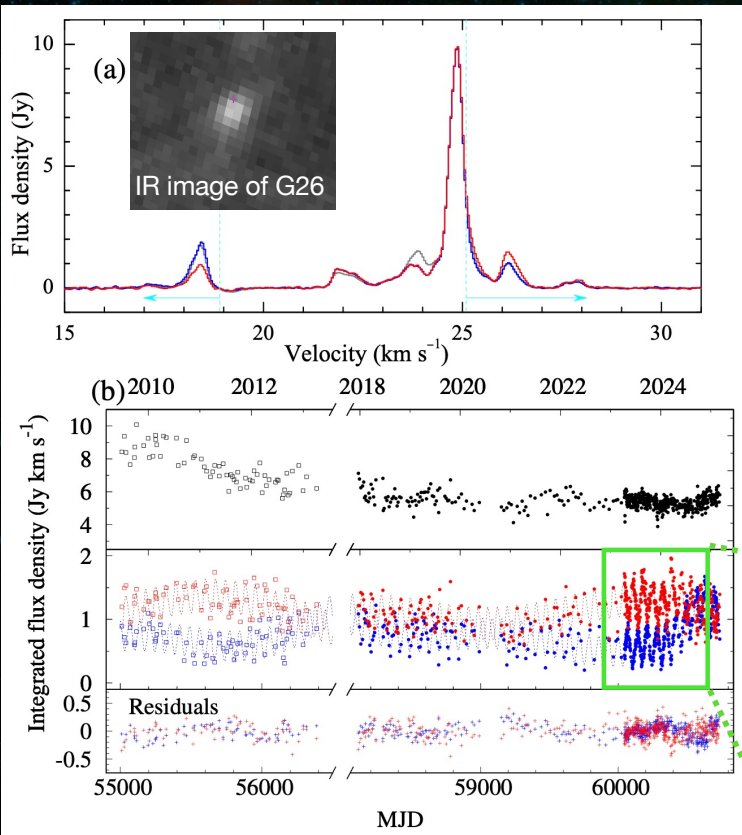


# Origin of synchronised periodic variability of methanol maser features in G26.598-0.024

James O. Chibueze, P. Wolak, M. Szymczak, A. Kobak, A. Varma, A. Bartkiewicz, B. Stecklum and C.J. Ugwu (University of South Africa, Nicolaus Copernicus University, Thüringer Landessternwarte Tautenburg)

We report the discovery of periodic maser variability of an unusual pattern in the high-mass young stellar object G26.598—0.024. **Methods.** A ten-year monitoring of the 6.7 GHz methanol maser was carried out with the Torun 32 m radio telescope. The archival data collected so far were also used to characterize the target with high angular resolution and examine its infrared variability. We found anticorrelated flux variations of the opposite blue-shifted and redshifted emission features with a period of  $70.1 \pm 2.2$  d and the relative amplitude of 1.3 and 0.6, respectively. The light curves are best fit with a sinusoidal function modulated by mild changes in the average flux density on 3~5 yr timescales. The emission of the middle parts of the spectrum shows only long-term variability. High-angular-resolution data indicate that the maser is associated with one of the two 1.3 mm dust emission cores, while the periodic emission comes from two extended regions ~1500 au apart. We discuss several possible causes of the peculiar variability.

6.7GHz methanol maser spectra and light curves of G26 observed with the Torun radio telescope



Circumbinary protostellar system with a background Hill region (photon source)?

Grey contours represent ALMA 1.3mm dust continuum emission, with C1 and C2 as observed peaks.

Positions (legends) and velocities (colours) of 6.7 GHz methanol masers in G26. Triangles = EVN, Circles = VLA\_D, Crosses = VLA-C

The periodic anticorrelated masers are enclosed in dotted circles.

See Wolak et al. (2025)

