Z113a Multiple star formation in the VLA 1623−2417 region revealed by FAUST

Satoshi Ohashi (RIKEN), Claudio Cdella (INAF-OAA), Seyma Mercimek (INAF-OAA), Nami Sakai (RIKEN), Claire J. Chandler (NRAO), Cecilia Ceccarelli (Univ. Grenoble Alpes), Satoshi Yamamoto (Univ. Tokyo), and FAUST team

The VLA 1623-2427 is a complex star-forming region because of a protostellar binary and its associated circumstellar disk (A1 + A2), plus a Class 0 protostar (B) at 150 au away from the binary. In addition to these protostars, another protostar (W) is located 2000 au away, making it a complex star-forming region. We have performed $H^{13}CO^+$ ($J = 3 - 2$), CS ($J = 5 - 4$), CCH ($N = 3 - 2$), CH_3OH, and $C^{18}O$ ($J = 2 - 1$) molecular observations of this region with the ALMA Large project, FAUST.

We found that the disk minor axis of the circum-binary disk and outflow direction are inconsistent, suggesting that the angular momentum and magnetic field may be misaligned. We also found that the CH_3OH emission lines are detected for the first time in the vicinity of protostars A1 and B. Furthermore, we observed the gas in the envelope by the $C^{18}O$ emission and found a streamer-like structure connecting the binary system A+B and protostar W. This result suggests that the protostar W may have been ejected from the A+B binary during its protostellar formation.

We will discuss the multiple star formation of VLA 1623 by summarizing these results.