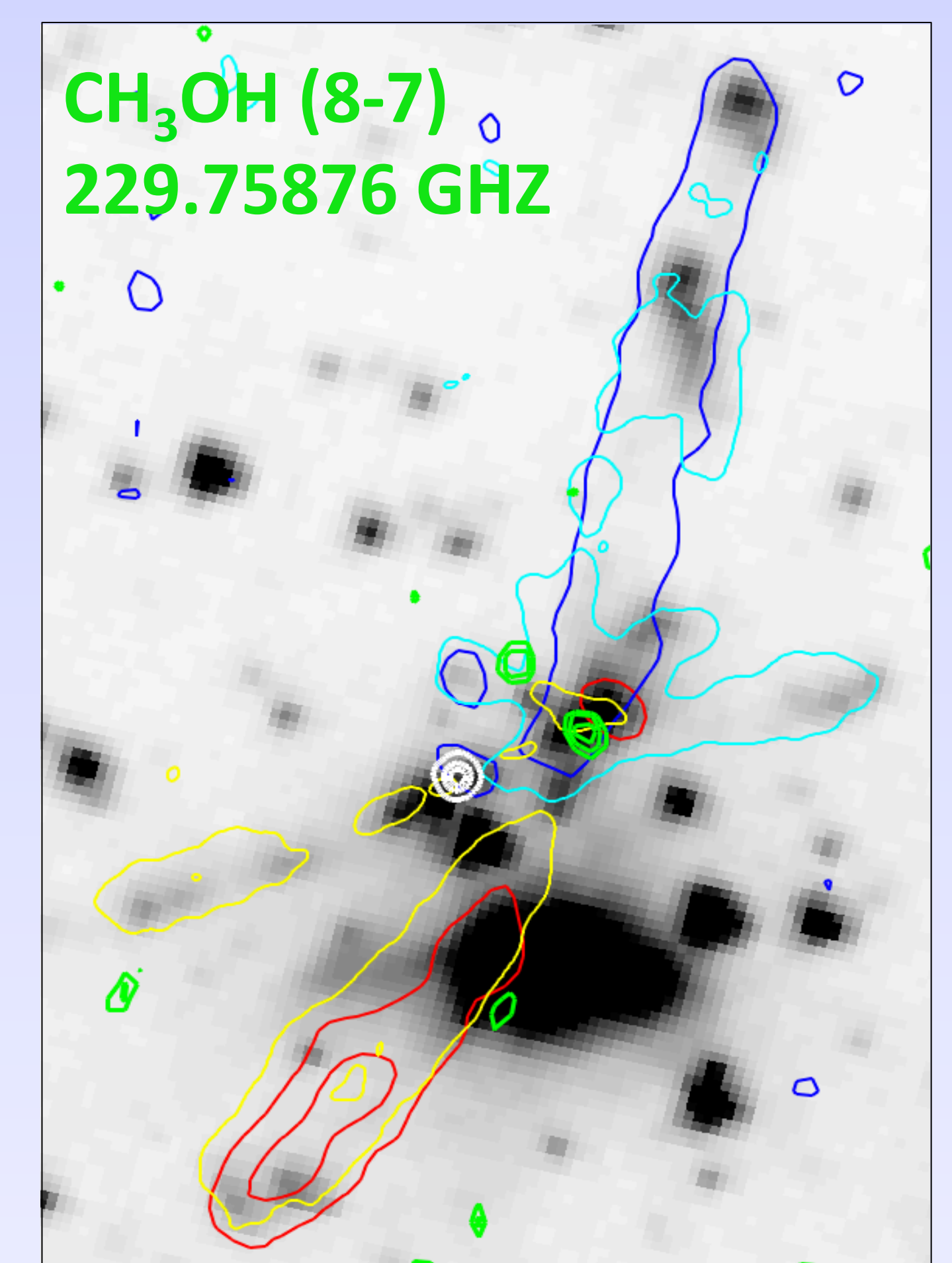
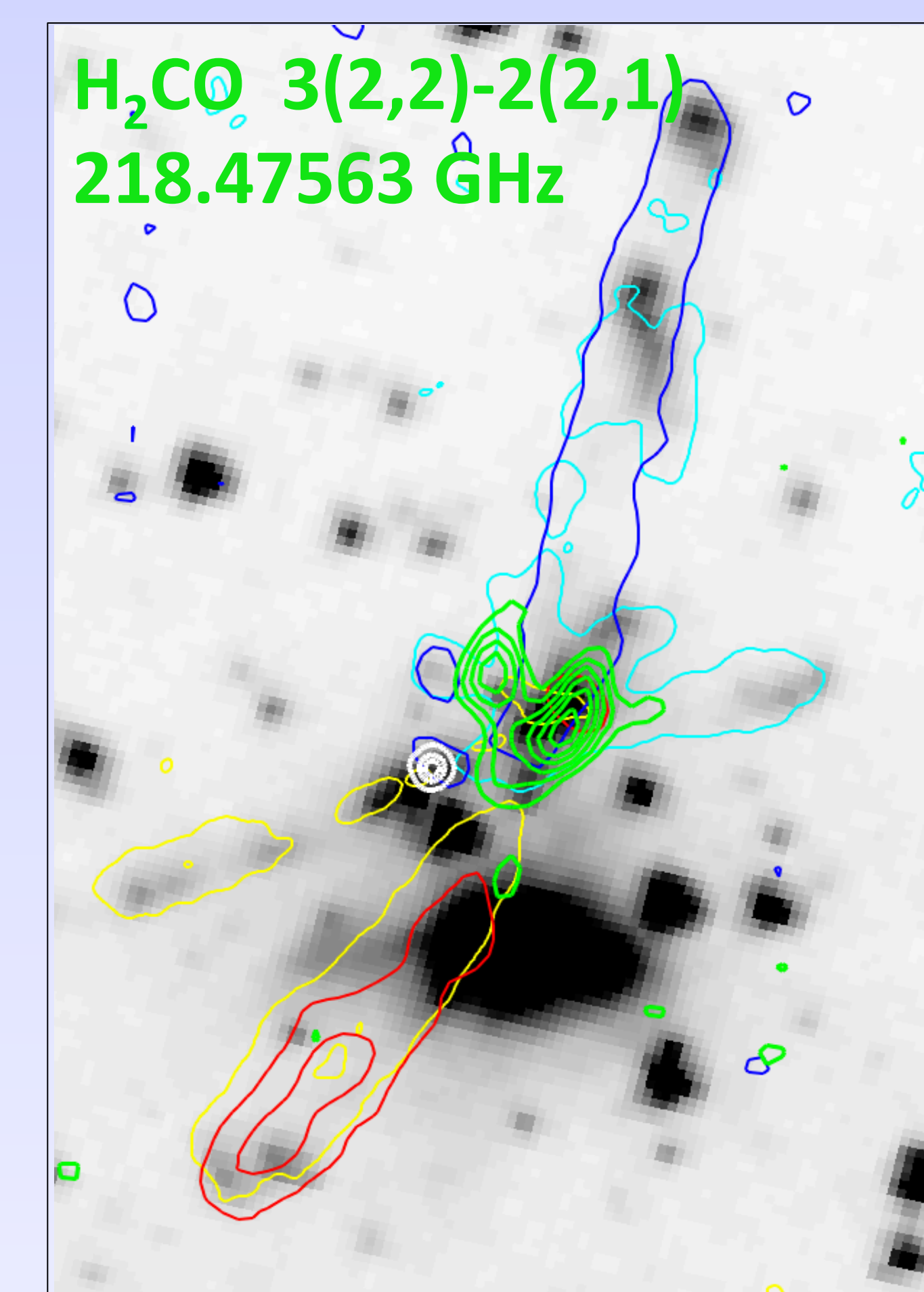
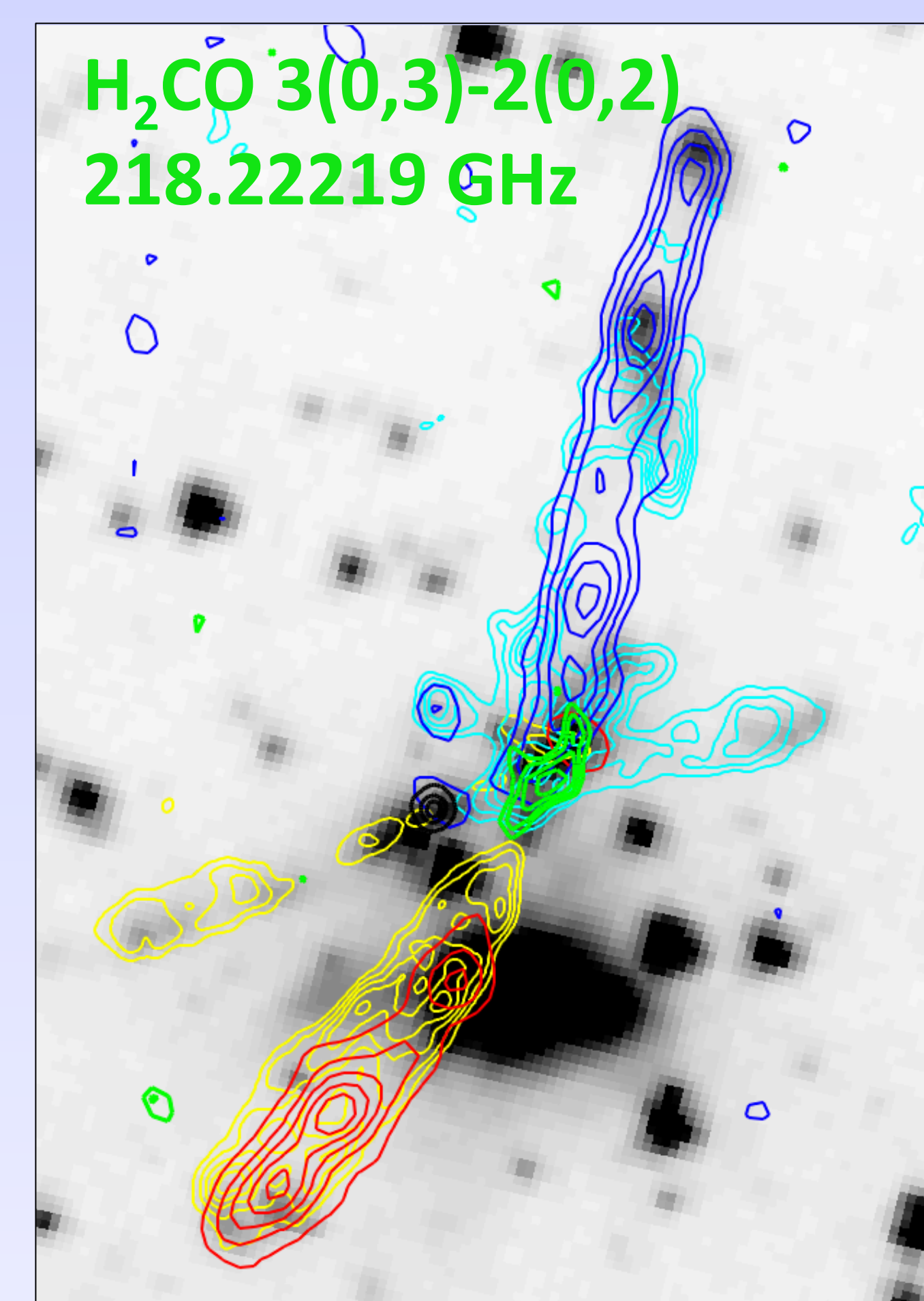
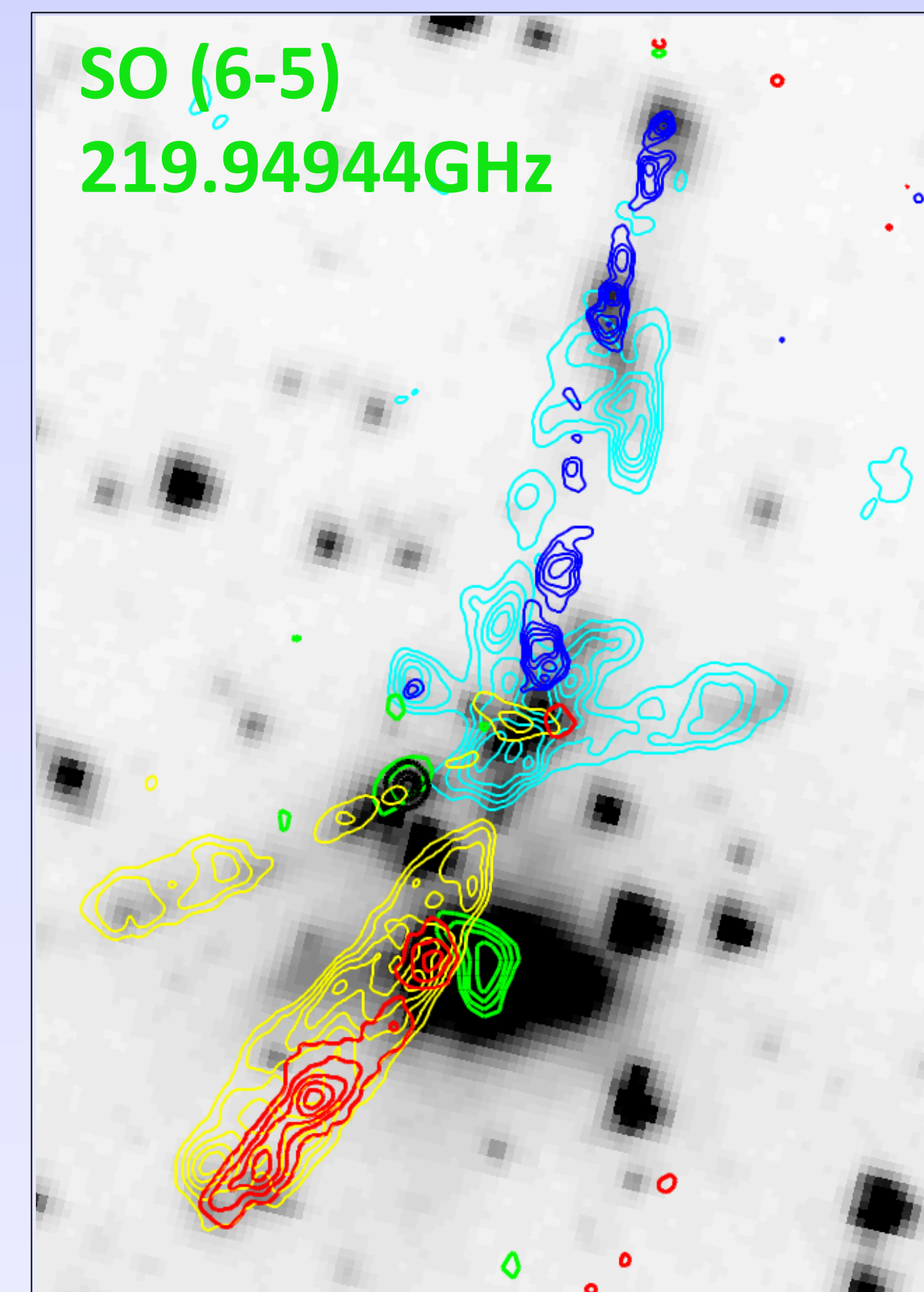
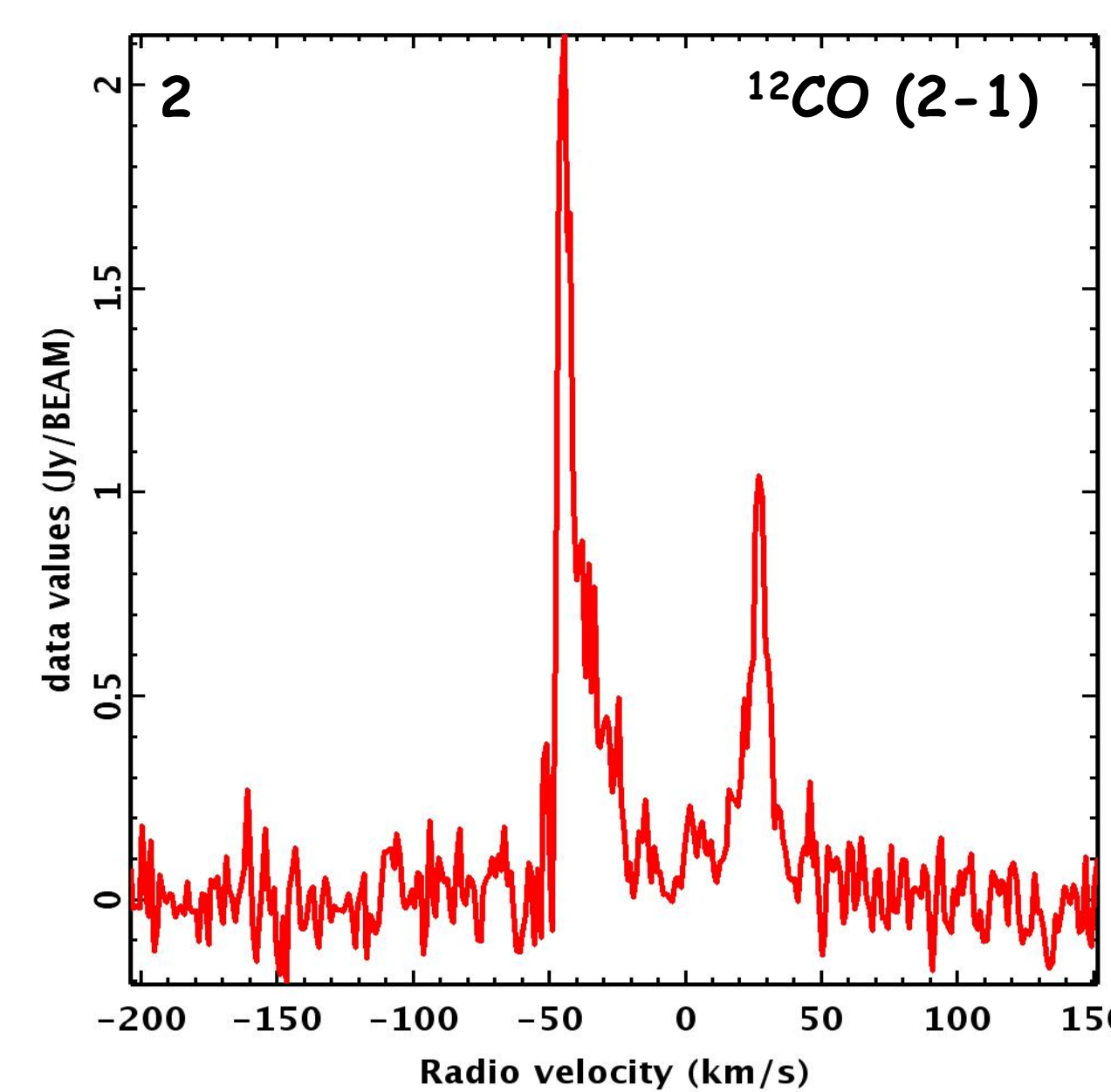
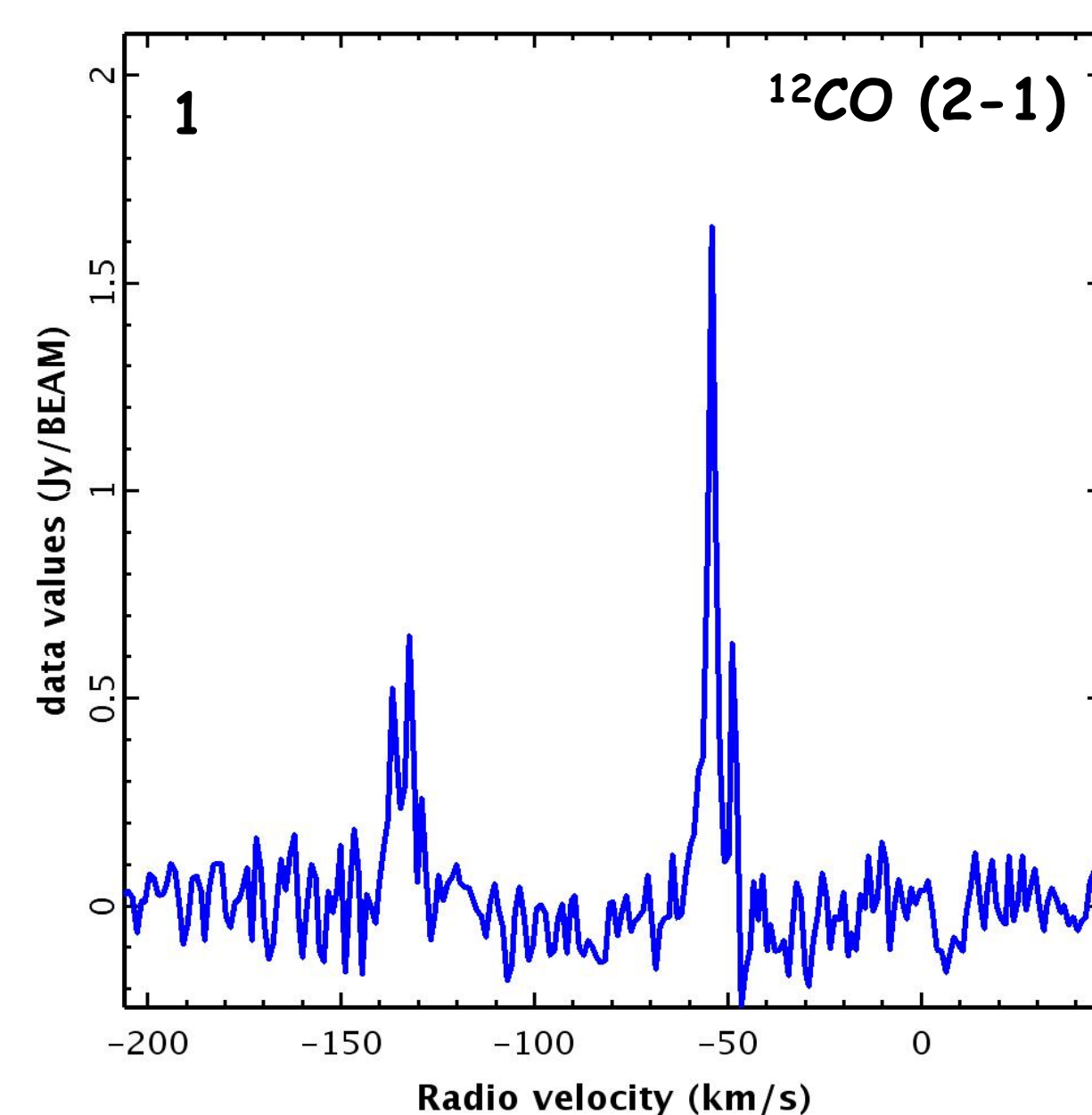
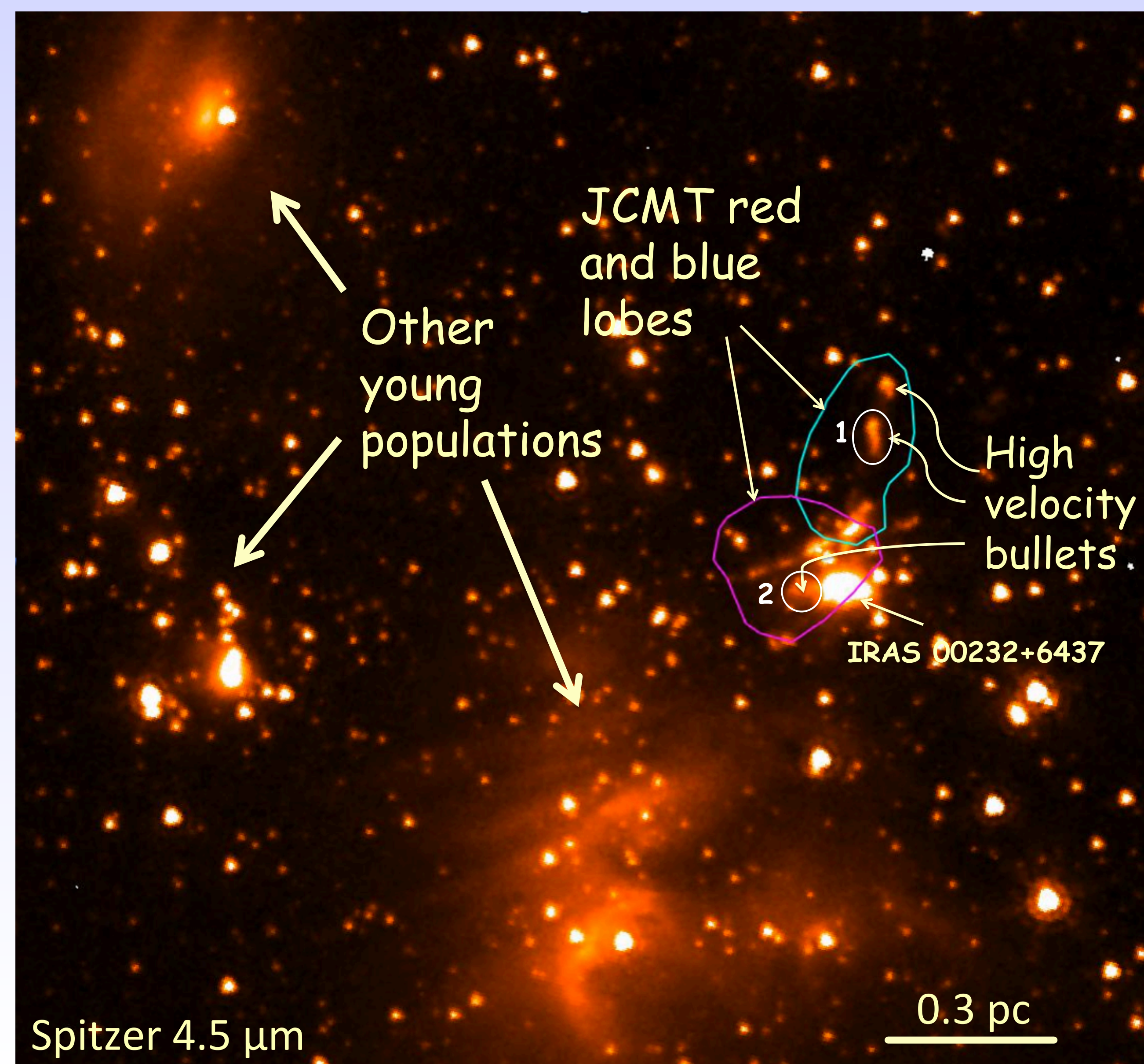


One of the most energetic outflows ever observed with SMA locates within a small (550 M_⊙) isolated molecular cloud, containing small groups of young stars at a distance of 1.1 kpc. IRAS00232+6437 is the only known point source in the region but about 0.05 pc shifted from the outflow's center. The outflow was initially detected with JCMT ¹²CO(3-2) observation, but the high velocity components and multi-outflow structure was unveiled by SMA compact and extended configuration maps made in May 2012 and October 2013. Surprisingly only one massive (20 M_⊙) compact 1.3 mm continuum source was detected in the mapped region (also observed in 450 μm and 850 μm SCUBA-2 at JCMT). Even with high resolution (~1'') extended configuration images, we cannot determine if it is a single core or contains multiple cores. Two other dense cores were detected in H₂CO (formaldehyde) and CH₃OH (methanol) maps. We identify at least three separated outflows in this region, but one extremely high velocity outflow is still noticeable.

G120.248+2.165 at a Glance:

Total gas mass from ¹²CO (2-1): 30 M_⊙ (JCMT), 4M_⊙ (SMA, Compact)
 Total mass for the only 1.3 mm continuum source: 20 M_⊙ (SMA, Compact)
 V_{LSR}: -50 km s⁻¹ Outflow velocity range: -150 km s⁻¹ to +50 km s⁻¹
 Momentum: 330 M_⊙ km s⁻¹
 Outflow Rate: 0.14 M_⊙ km s⁻¹ yr⁻¹
 Total Energy: 1.66 × 10⁴ M_⊙ (km s⁻¹)²
 Dynamical Time Scale: 2.4 × 10³ yr

Observations



CO High Velocity Integrated -160 to -100 km s⁻¹
 CO High Velocity Integrated +5 to +35 km s⁻¹
 CO Low Velocity Integrated -70 to -55 km s⁻¹
 CO Low Velocity Integrated -45 to -10 km s⁻¹
 1.3 mm continuum

We suggest three separated outflows in this region:
 #1: Extremely high velocity non-collimated
 #2: Mid-velocity collimated
 #3: High velocity along line of sight

