# Exploring the Interacting VV 114E Cores with MIRI/MRS

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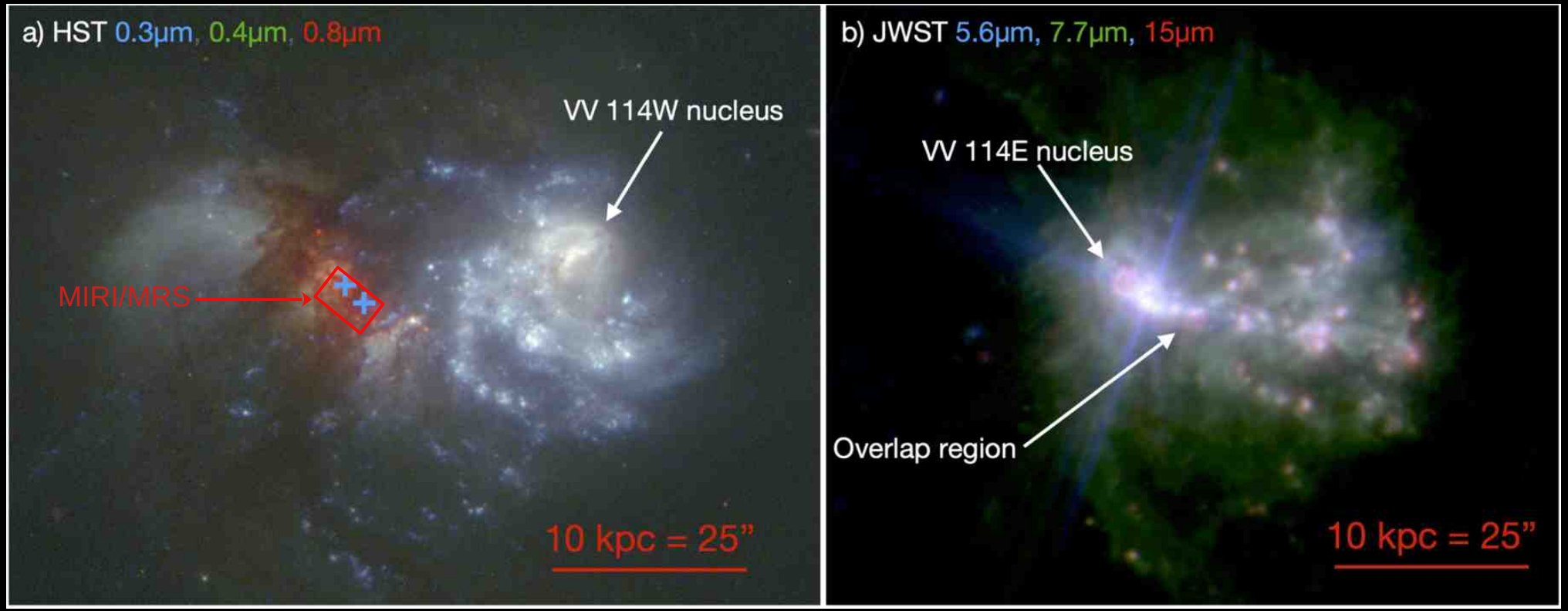
# VV 114: Arp236, IC1623

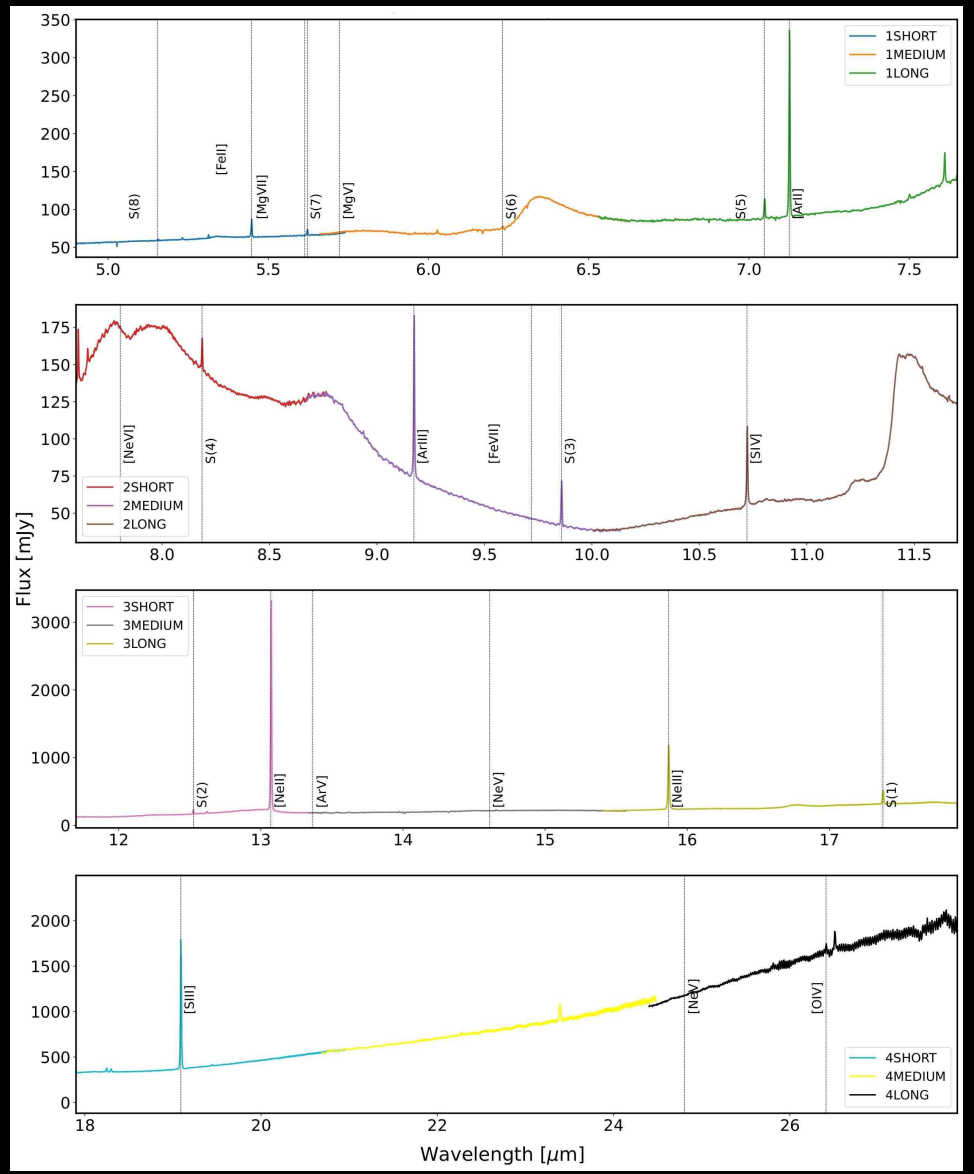


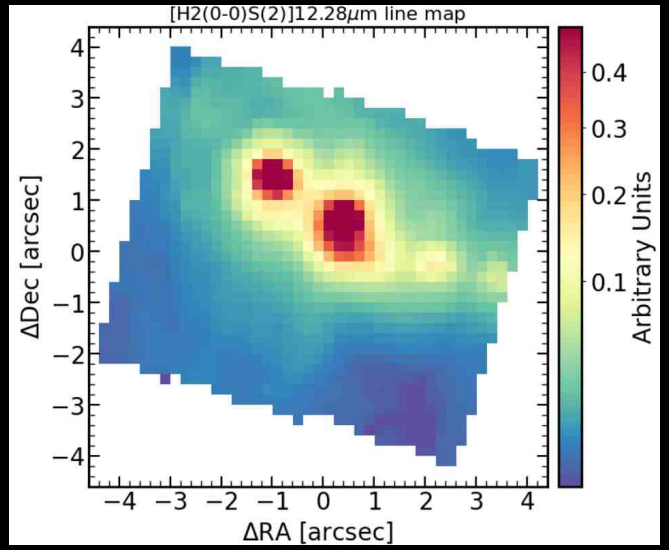

+ symbols mark the location of the VV 114E NE and SW cores detected with MIRI

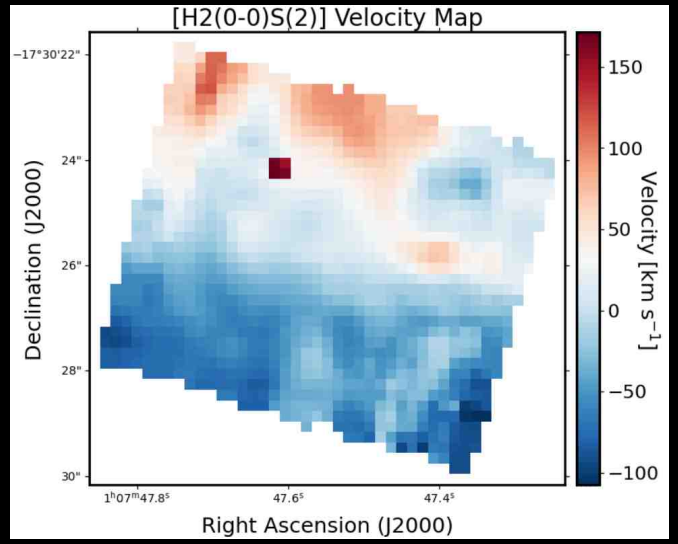
Evans et al. 2022 (GOALS - JWST)

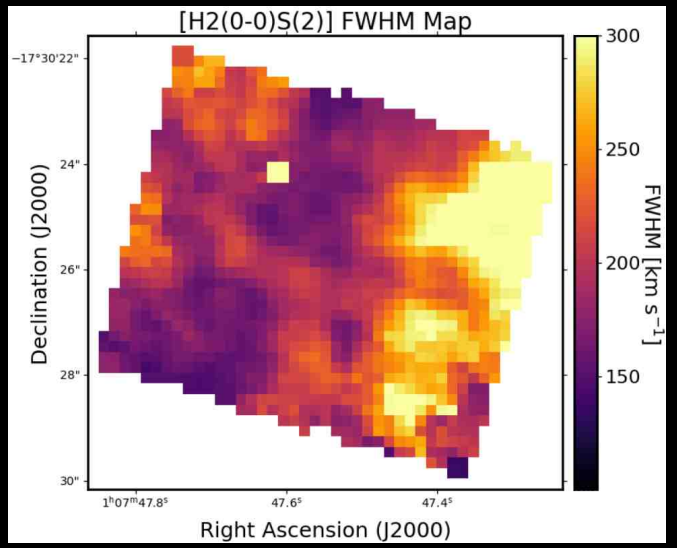
# MIRI/MRS Spectra

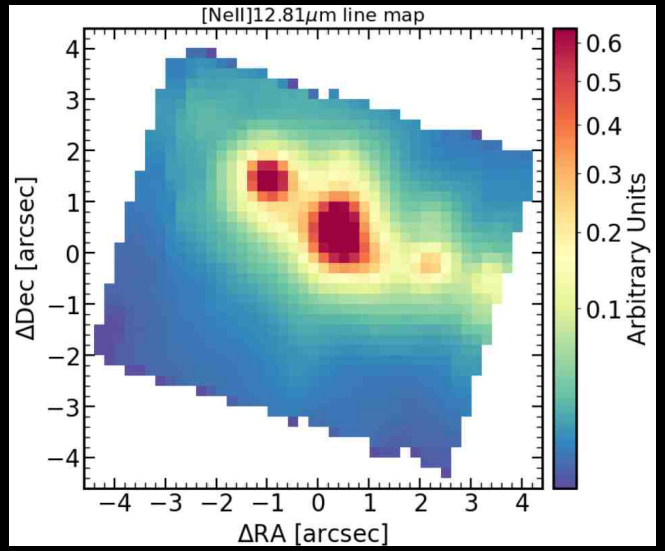
- 9.7 μm Silicate absorption
  Measures dust obscuration
- H2 S(3), H2 S(2), H2 S(1)
  Warm molecular hydrogen emission
- [Ar II], [Ne II]
  Low-ionization lines, star-formation
- [Ar III], [Ne III], [S III], [S IV]
  Higher-ionization lines, AGN tracers?
- No high-ionization coronal lines (e.g., [Ne V], [Ne VI])
- Pfα (faint)
  Hydrogen recombination line, star-forming regions heavily obscured by gas, dust

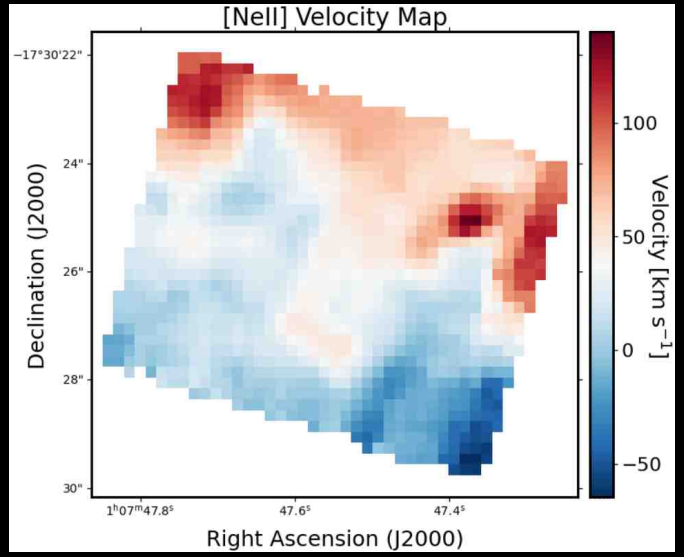


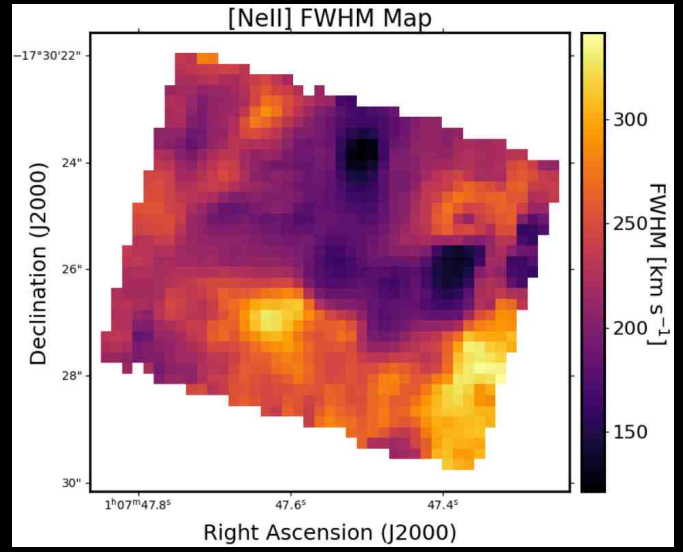

[H2(0-0)S(2)]12.28μm line map
ΔDec [arcsec]
ΔRA [arcsec]
Arbitrary Units

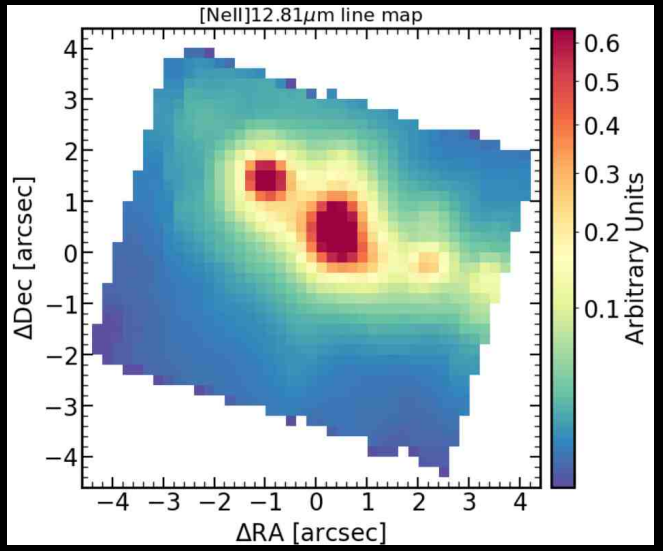

[H2(0-0)S(2)] Velocity Map
Declination (J2000)
Right Ascension (J2000)
Velocity [km s$^{-1}$]

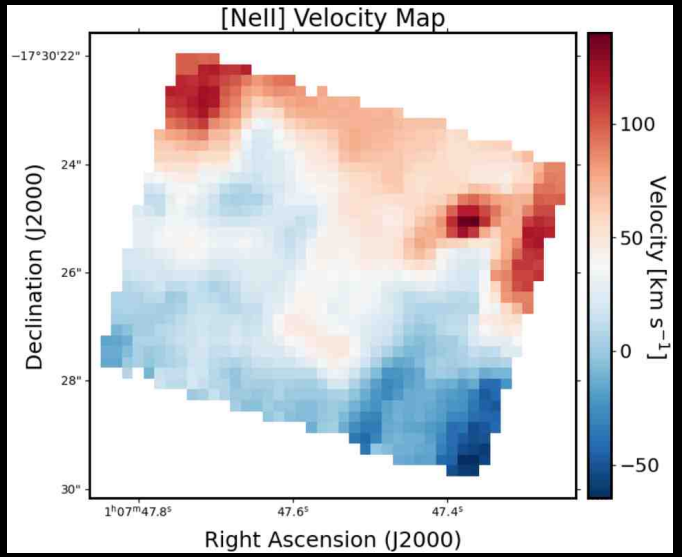

[H2(0-0)S(2)] FWHM Map
Declination (J2000)
Right Ascension (J2000)
FWHM [km s$^{-1}$]

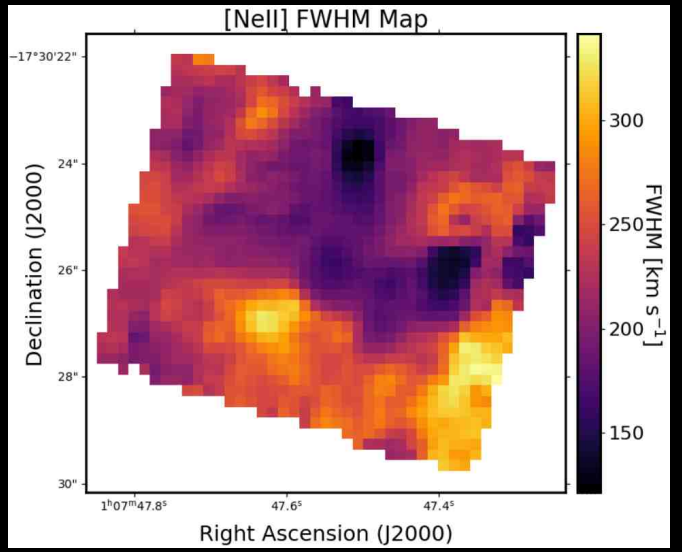

[NeII]12.81μm line map
ΔDec [arcsec]
ΔRA [arcsec]
Arbitrary Units


[NeII] Velocity Map
Declination (J2000)
Right Ascension (J2000)
Velocity [km s$^{-1}$]

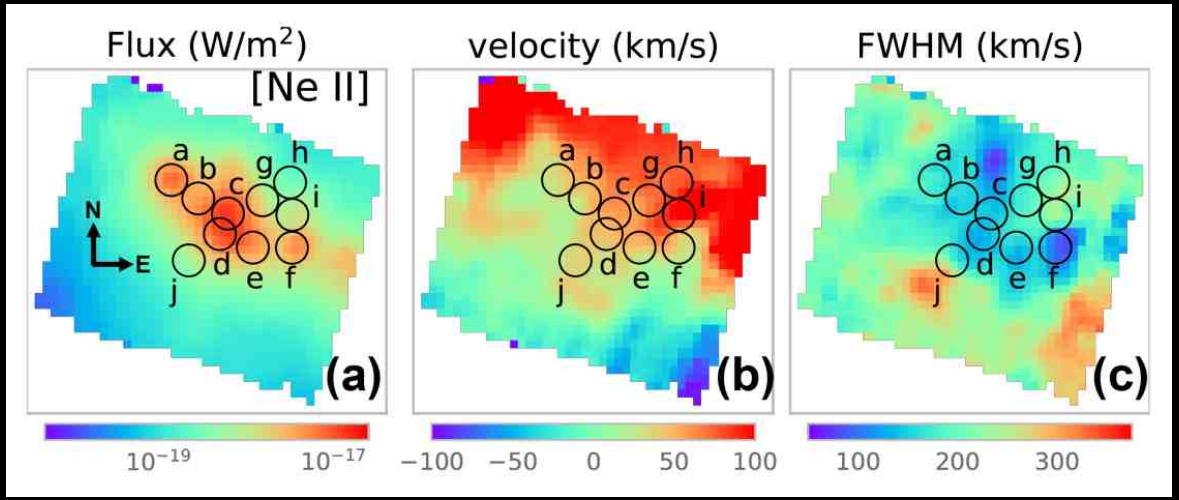

[NeII] FWHM Map
Declination (J2000)
Right Ascension (J2000)
FWHM [km s$^{-1}$]



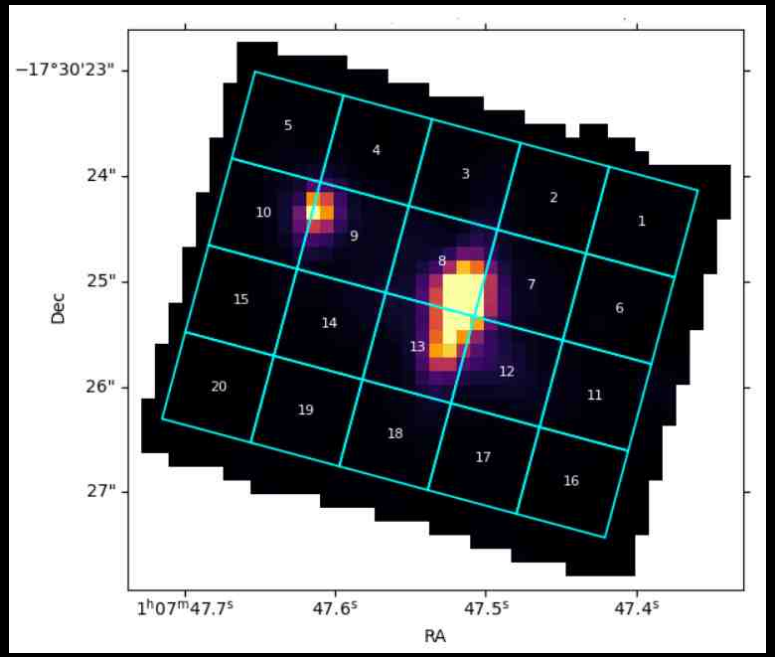



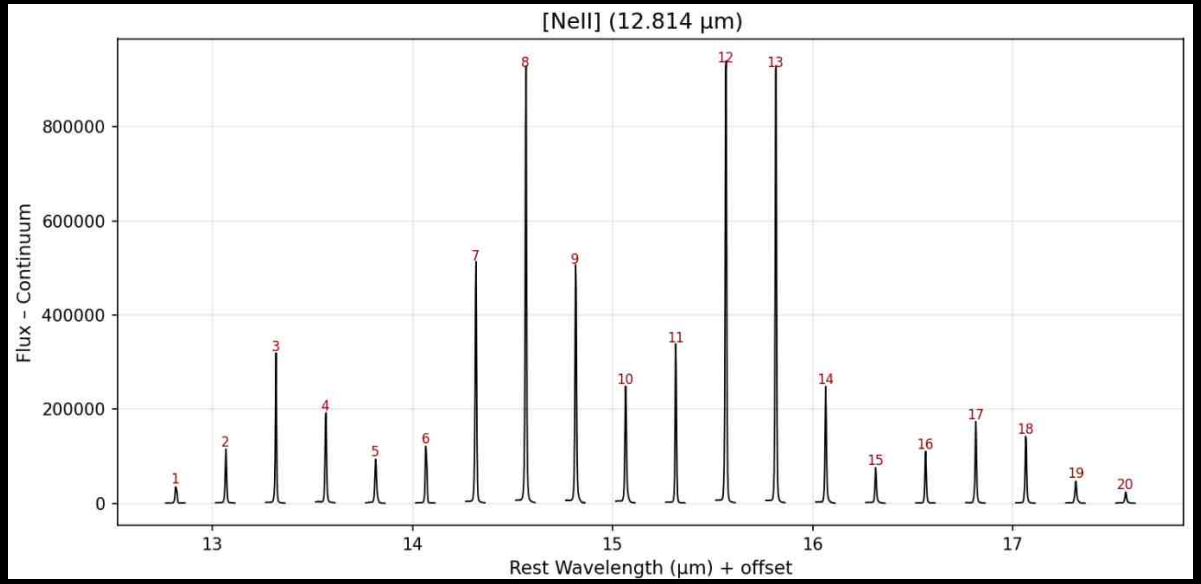

- Complex gas dynamics
- Tidal Features: South of the nucleus, consistent with extended tidal feature of interacting galaxy system
- Outflows: Broadening, multiple kinematic components

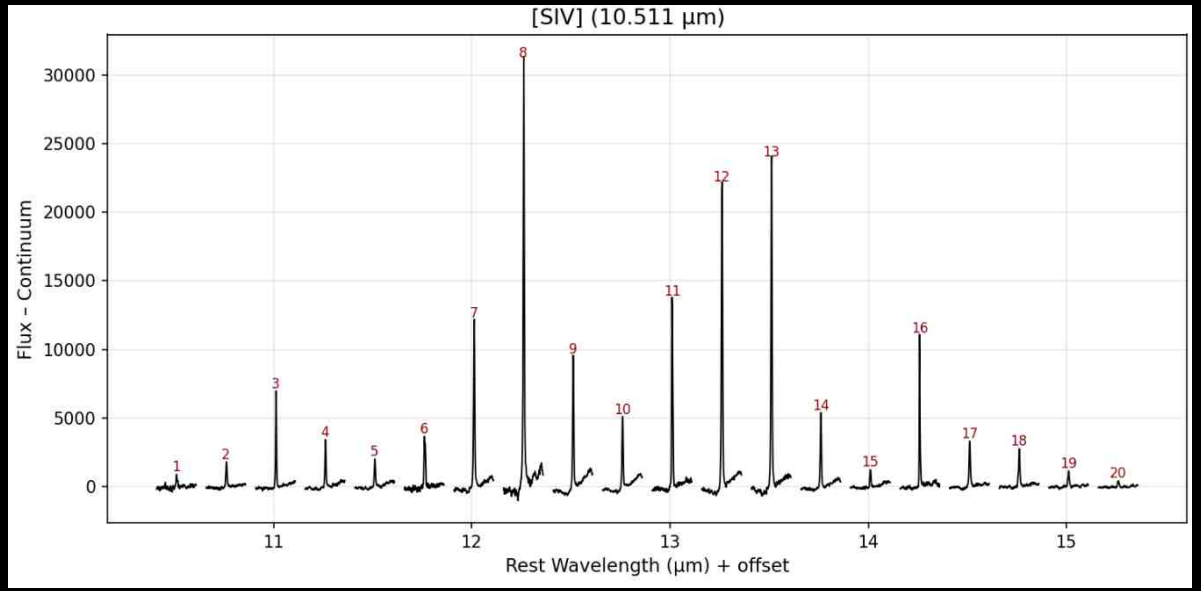



Rich et al. 2023




- Regions 9+10:
  [NeII]/[SVI] = 60.684
- Regions 8+7+12+13 :
  [NeII]/[SVI] = 44.267
- MIR not enough to explain the presence of an AGN.
- NIRSpec! (Rich et al. 2023)



# Thank You!


IF PEOPLE SAT OUTSIDE AND LOOKED AT THE STARS EACH NIGHT, I'LL BET THEY'D LIVE A LOT DIFFERENTLY.