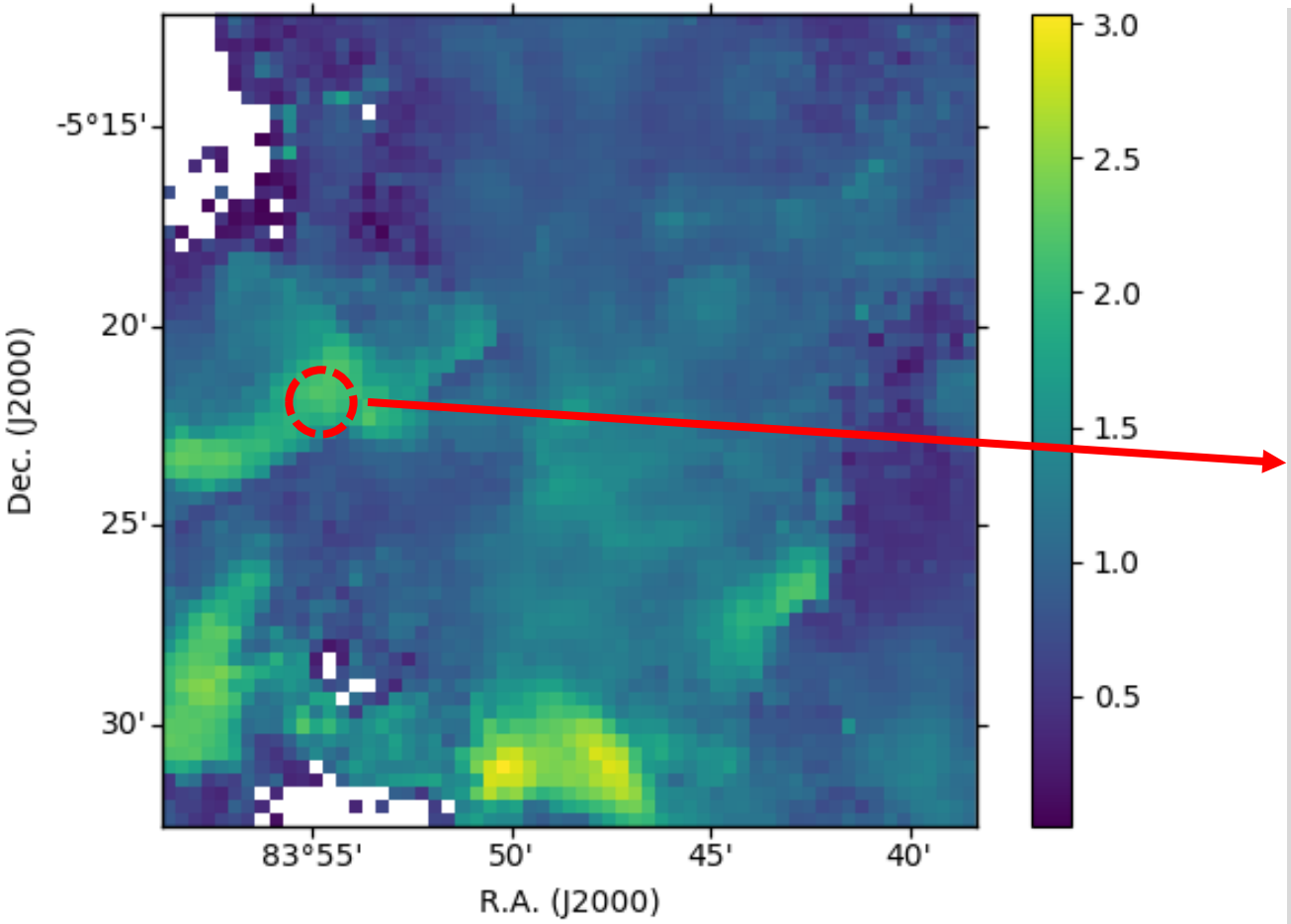
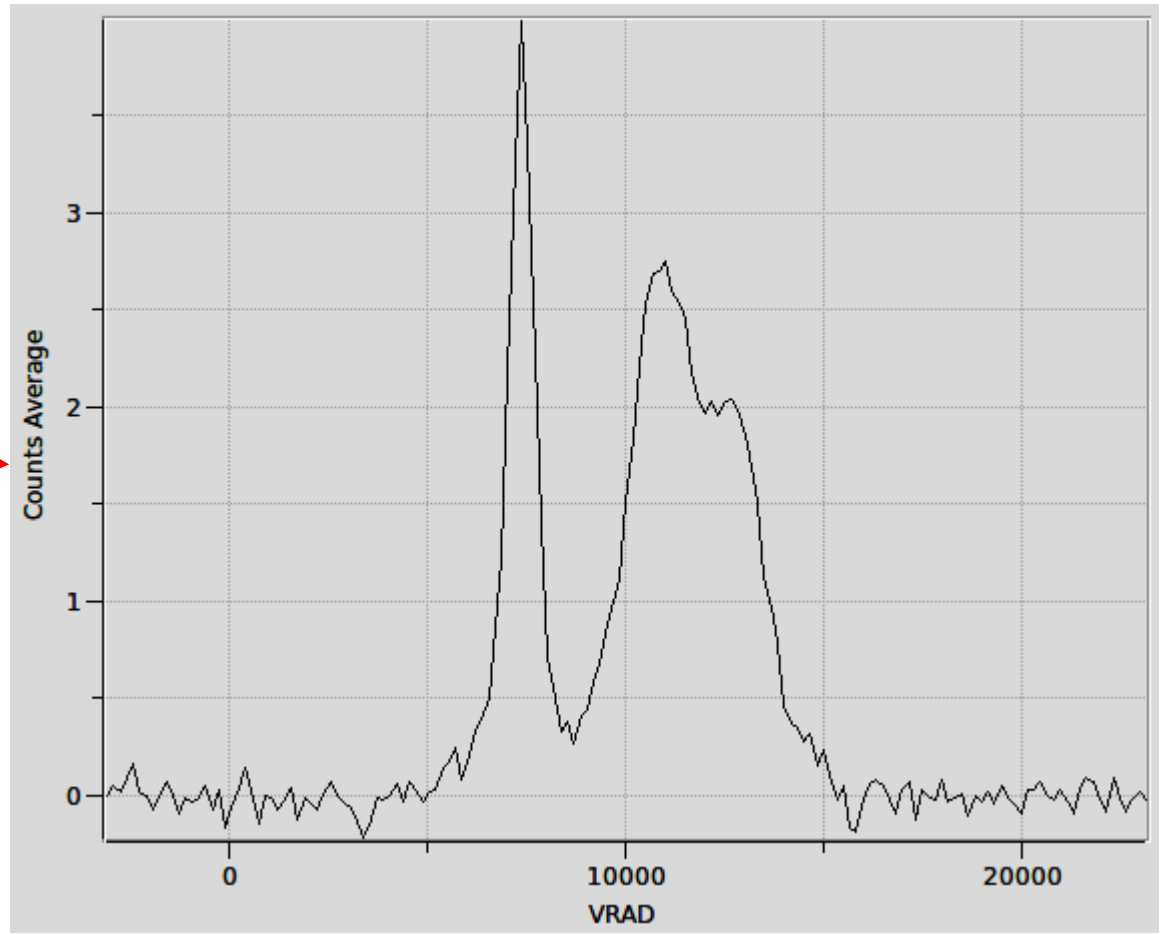
Single Dish Radio Observation

Channel map and position velocity diagram

Velocity dispersion map (moment 2)

- Intensity weighted velocity difference





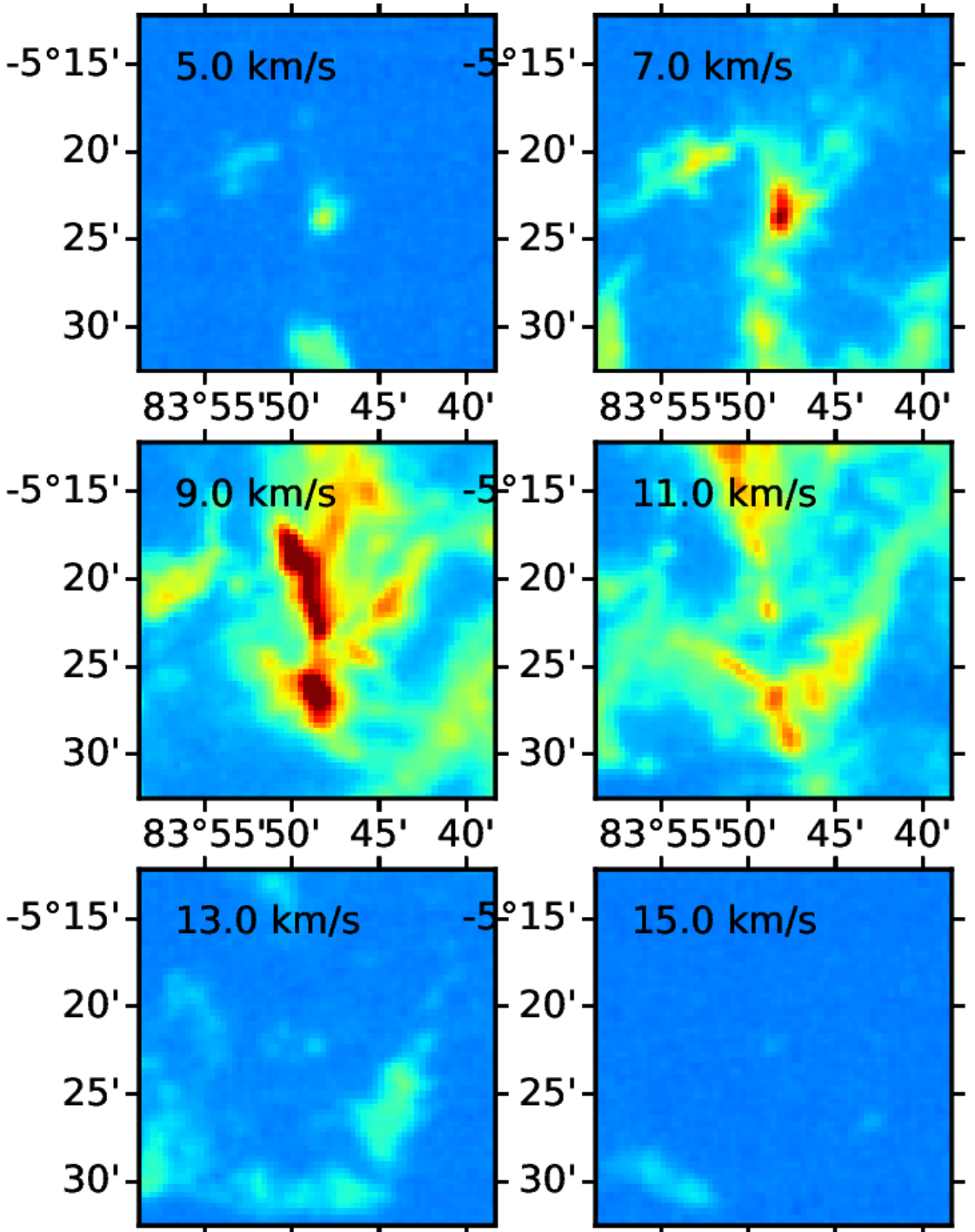
Two different components with different velocities

- Two cloud components are align along the line of sight.
- How can we visualize the gas components in different velocities?

Channel map

- Produce the integrated intensity map for sequential velocity bins.

- make_channel_map.py
  - Data_directory
  - Minimum_velocity
  - Maximum_velocity
  - Velocity_bin_size
  - System_velocity
  - Max_val_of_img
  - Cube_file_name.fits



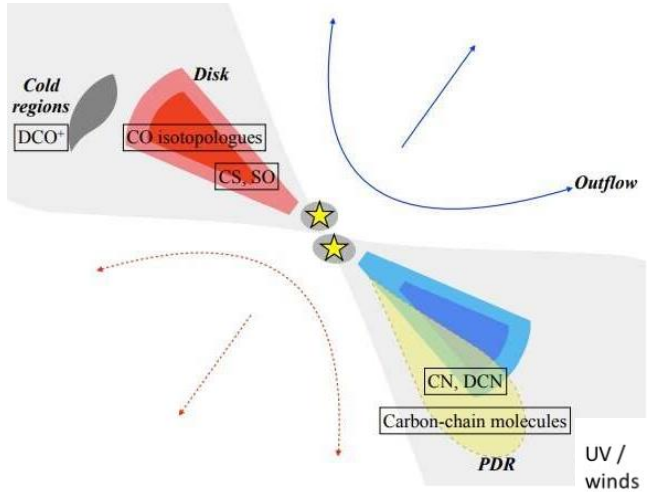
Checking the distribution of line intensities on the velocity space

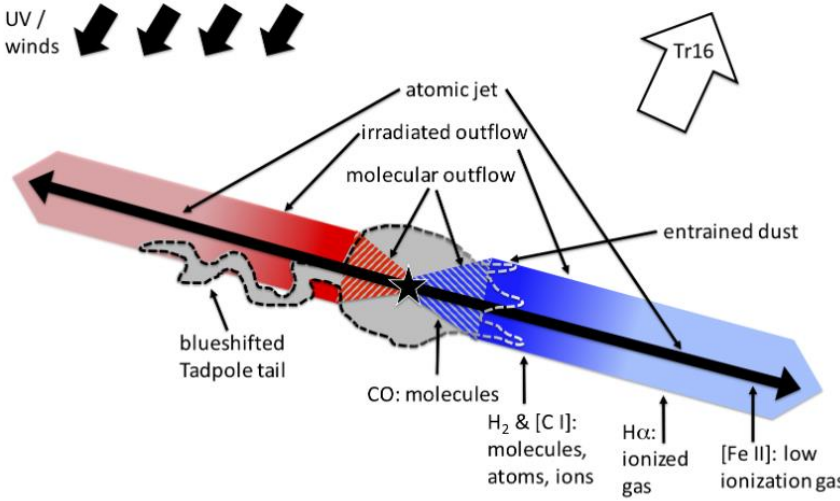
- Check the variation of the velocity more precisely.

Examples:

- Bipolar winds/outflows
- Disk rotation

- How can we distinguish between them?



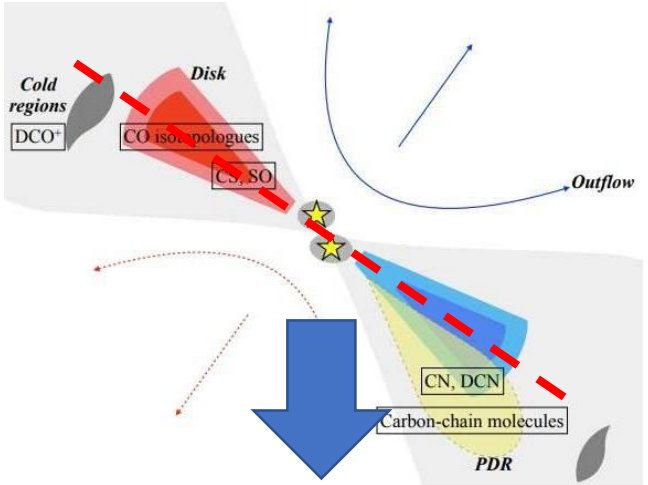


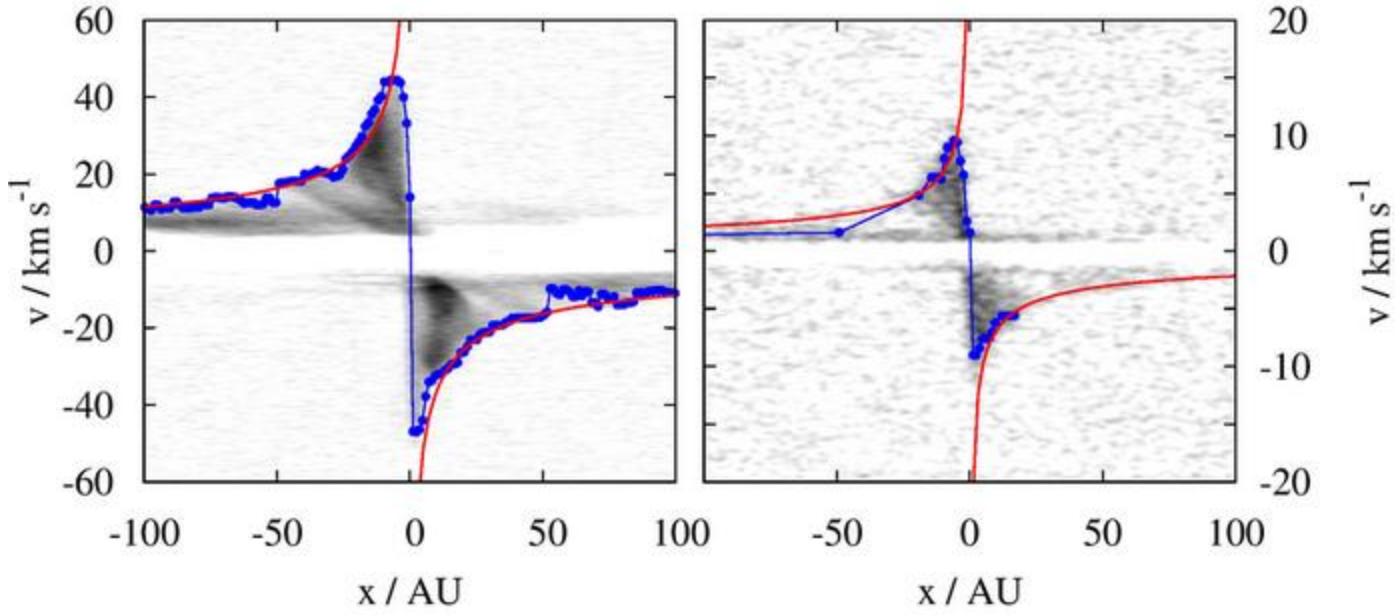
Position velocity diagram (PV-diagram)

- PV-diagram shows how the gas moving along the line of sight

Example:

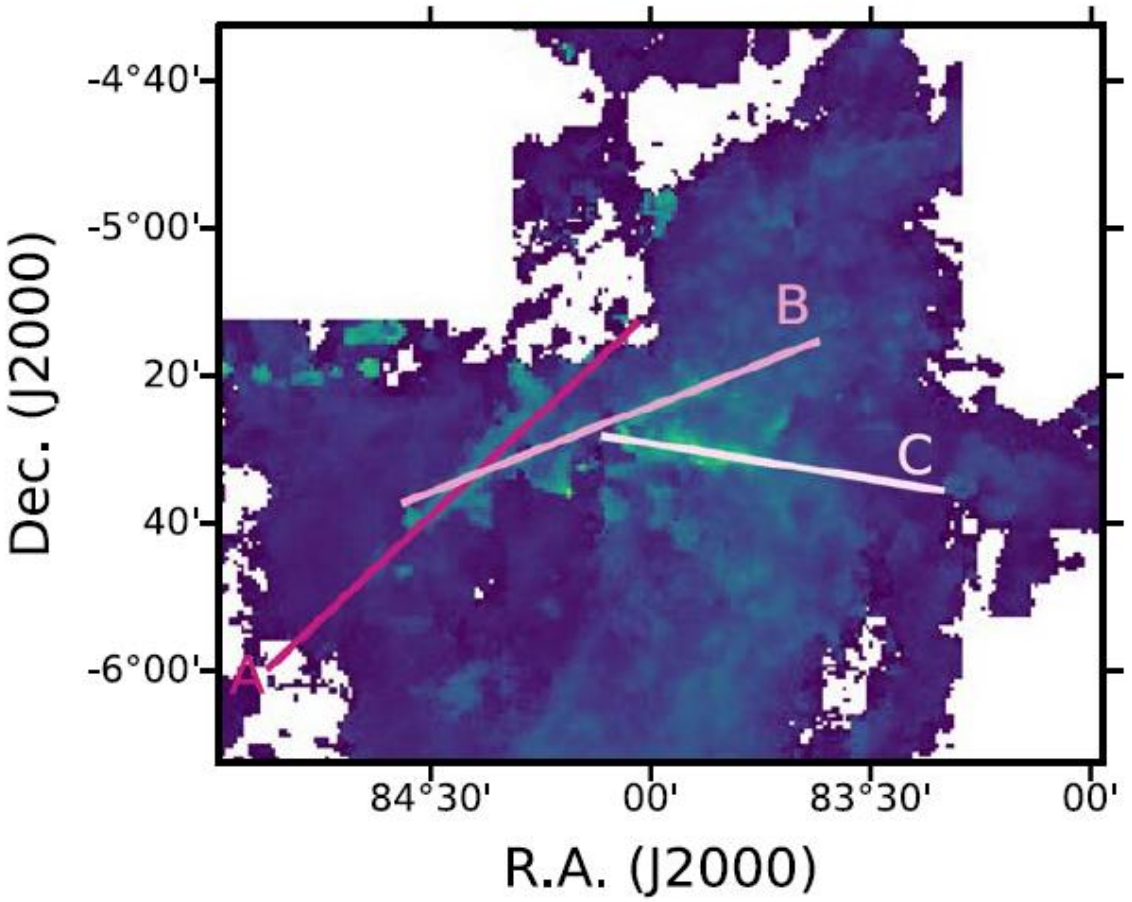
- Gas follows the Keplerian rotation profile on the PV diagram.

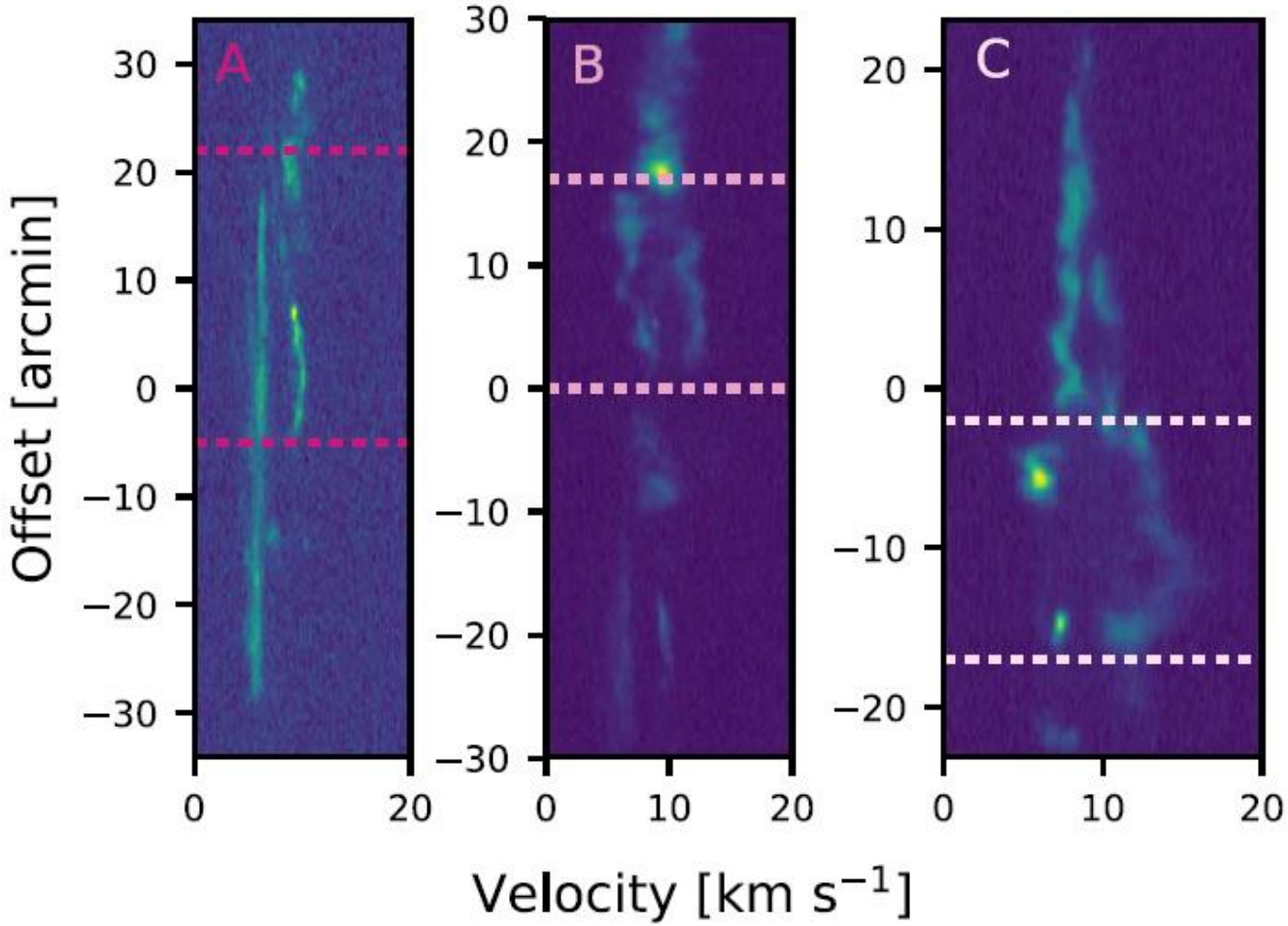




PV-diagram on the Orion A cloud

- In the ISF





PV-diagram on the Orion A cloud

- In L1647 (the southernmost part of the Orion A cloud)