

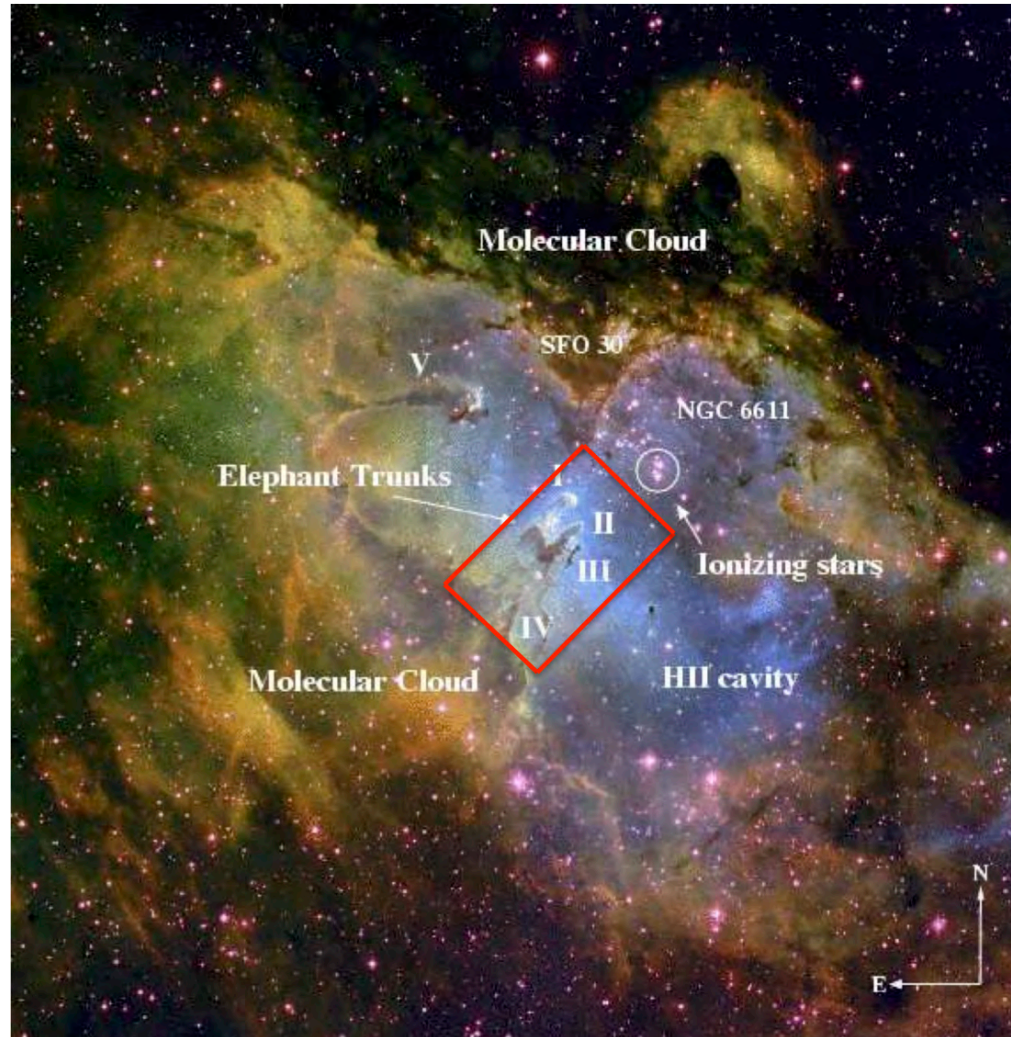
The Pillars of Creation revisited with MUSE: gas kinematics and high-mass stellar feedback traced by optical spectroscopy

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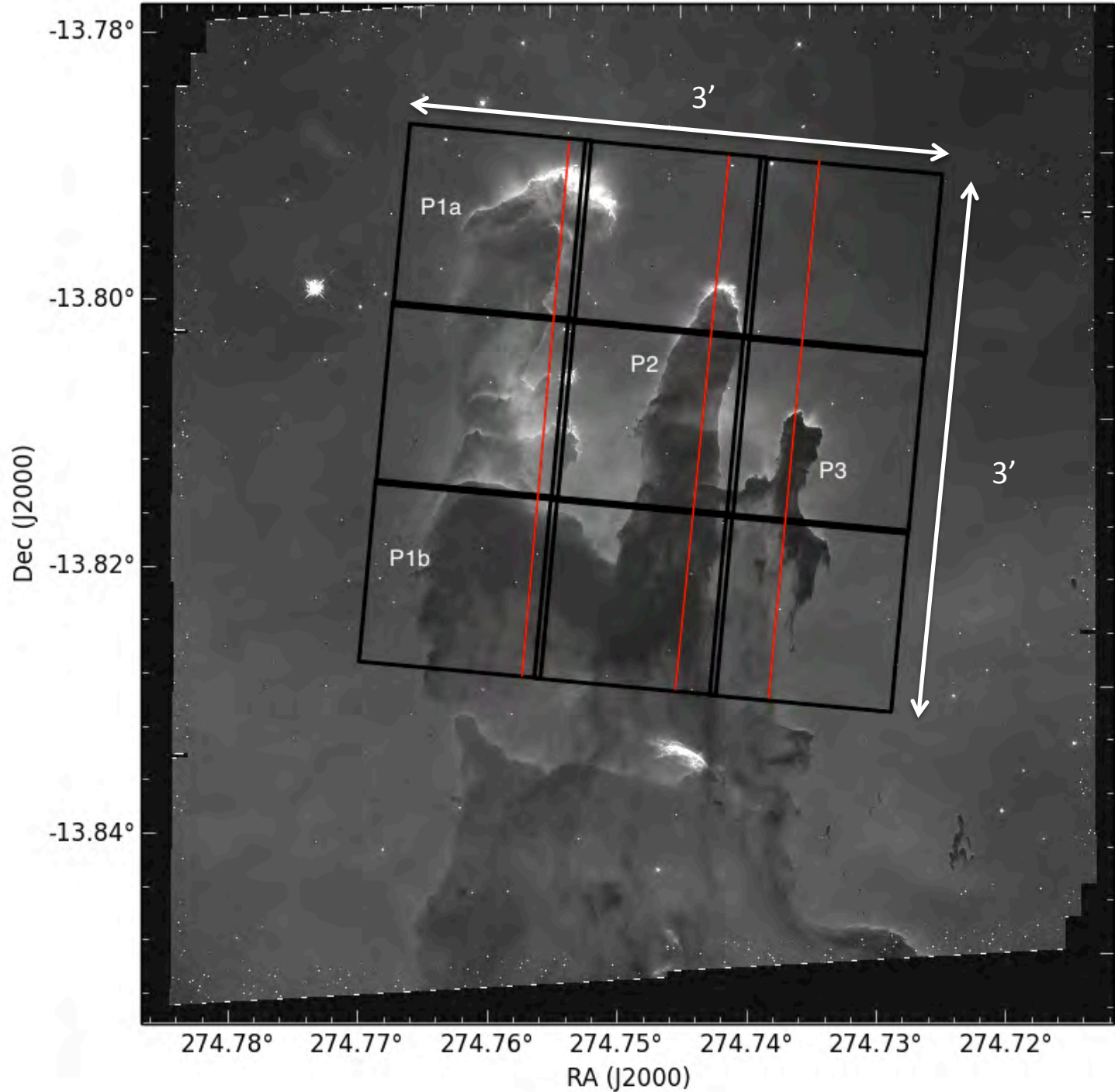
Collaborators: L. Testi, A. Ginsburg, J. Dale, S. Ramsay, B. Ercolano, M. Gritschneder

Puerto Varas, March 16th

The target: Pillars of Creation



Credit: T. A. Rector & B. A. Wolpa, NOAO, AURA



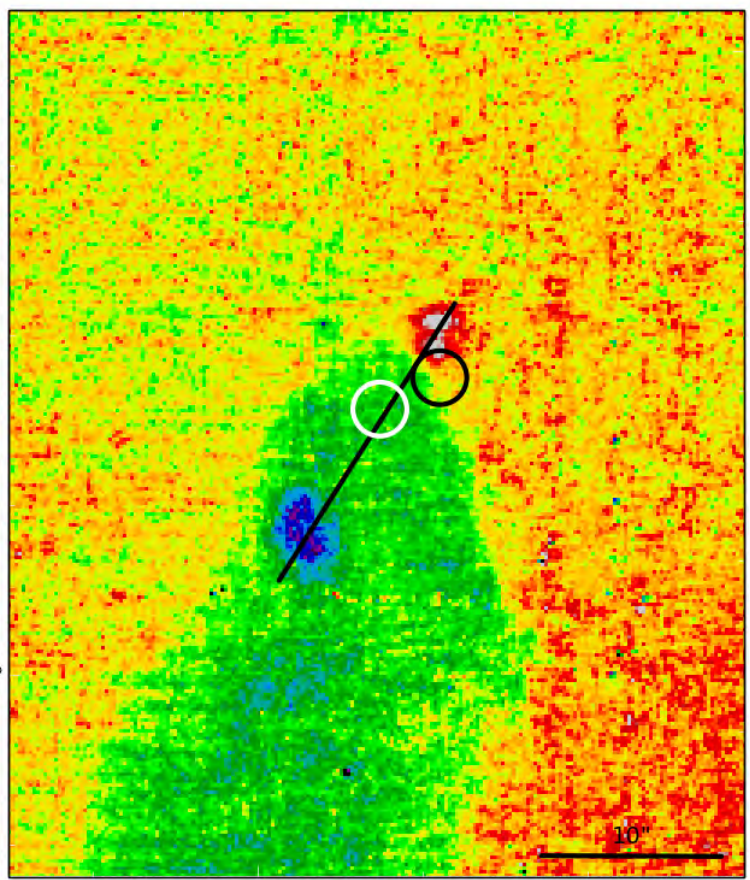
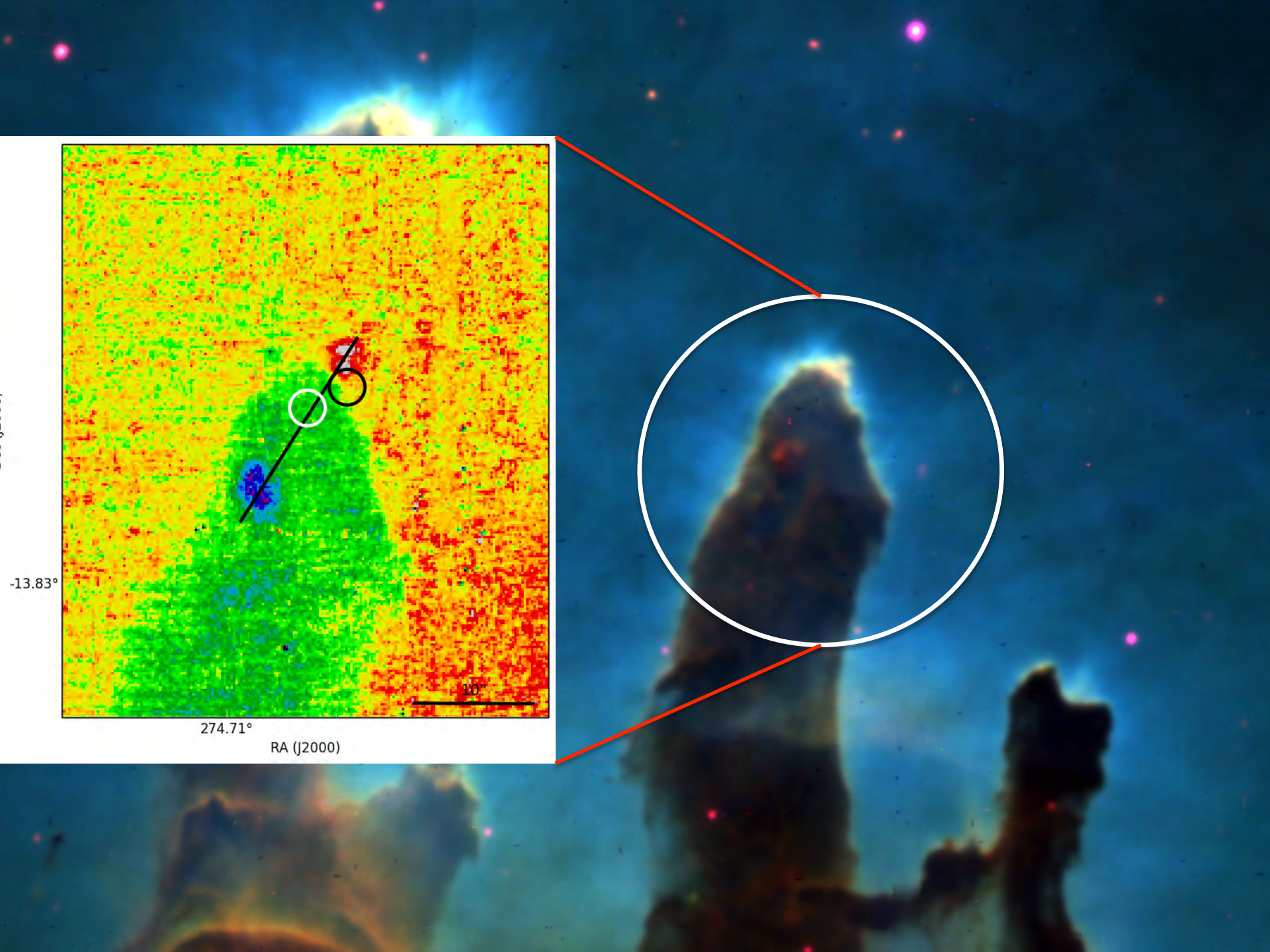
HST



OIII, H α , SII

McLeod et al., 2015

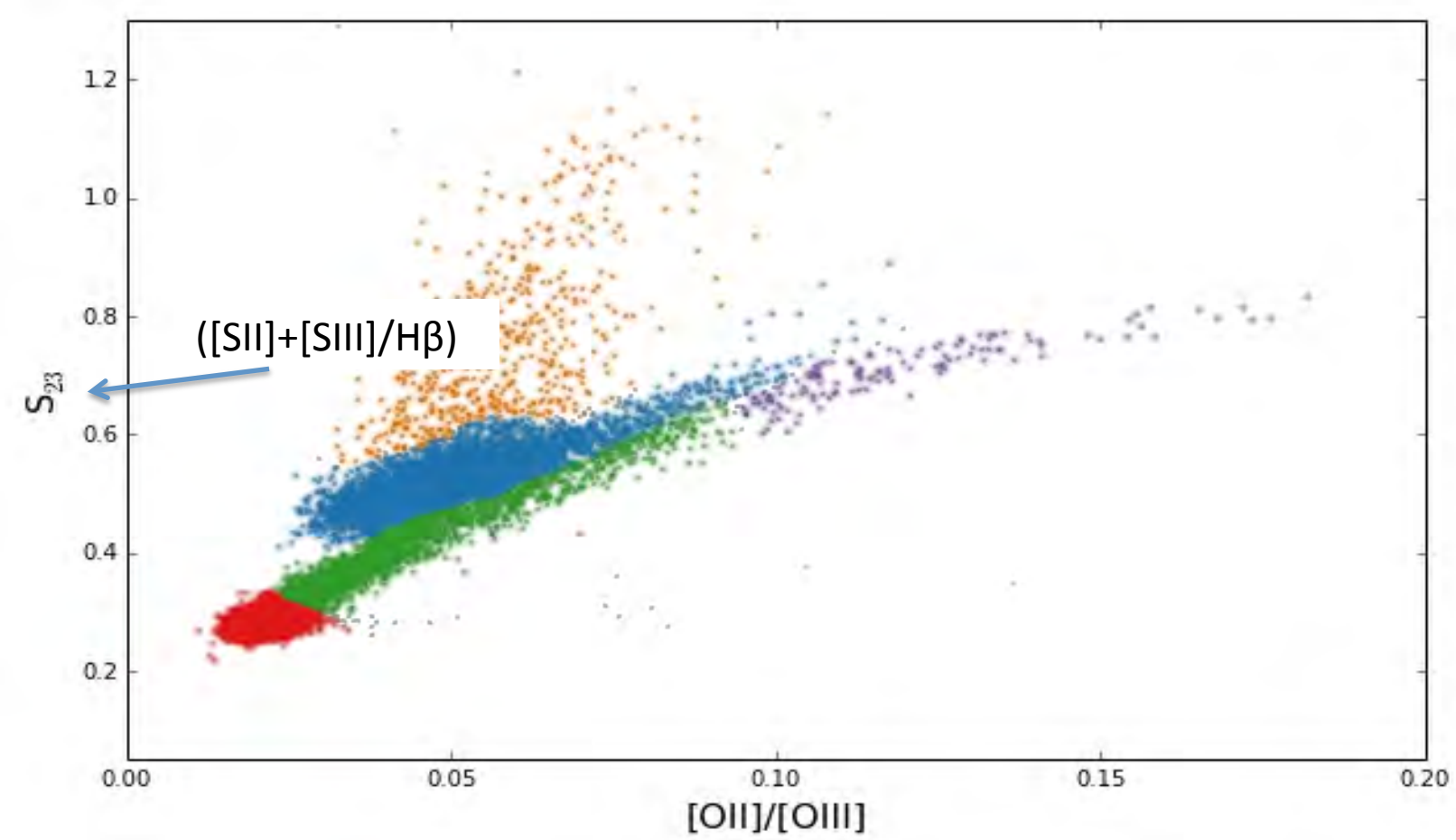
- physical parameters (N_e , T_e , v , A_V)
- ionisation + velocity structure
- outflow in middle pillar
- 3D structure
- expected lifetime = 3 Myr
- comparison with simulations

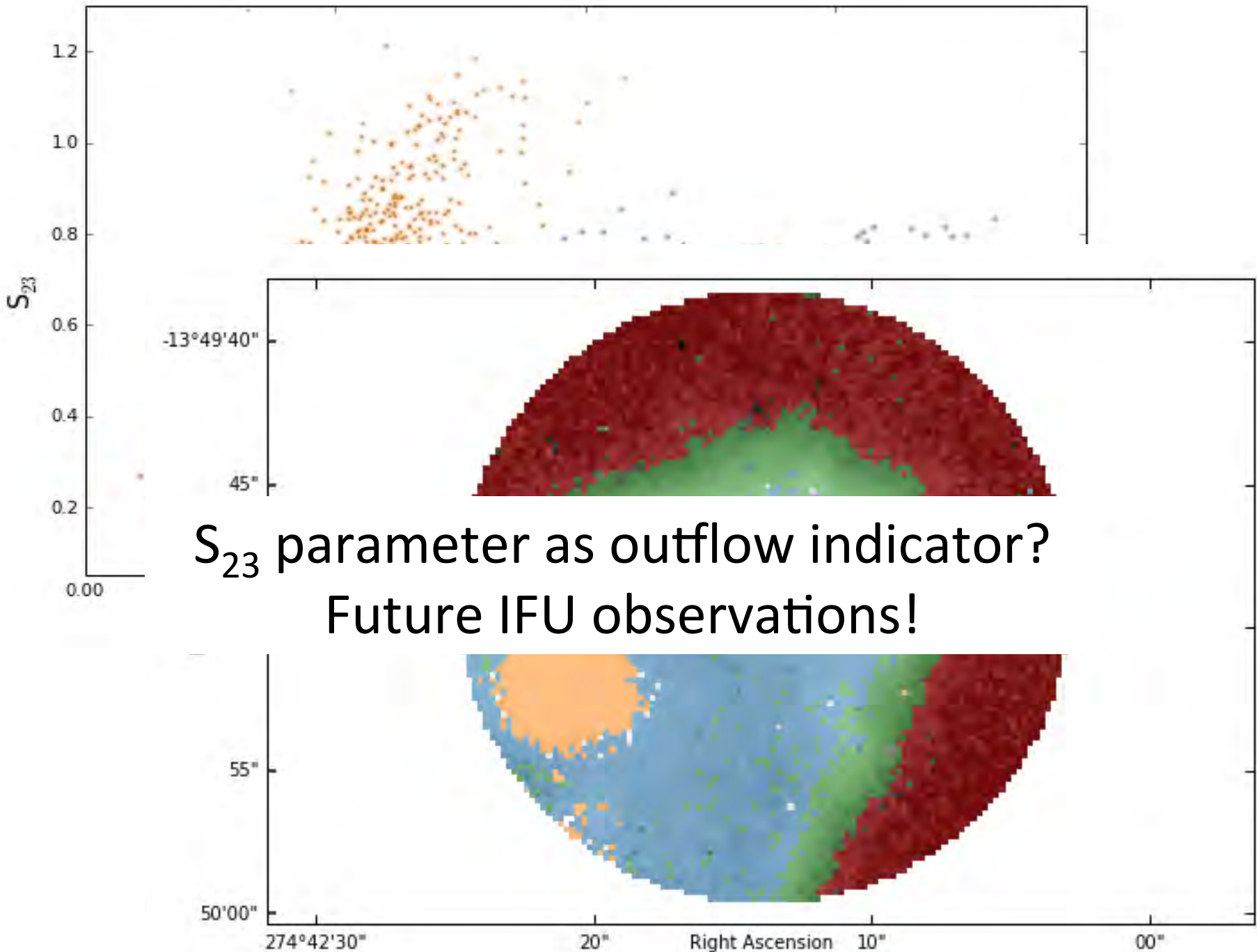


274.71°
RA (J2000)

-13.83°

10"

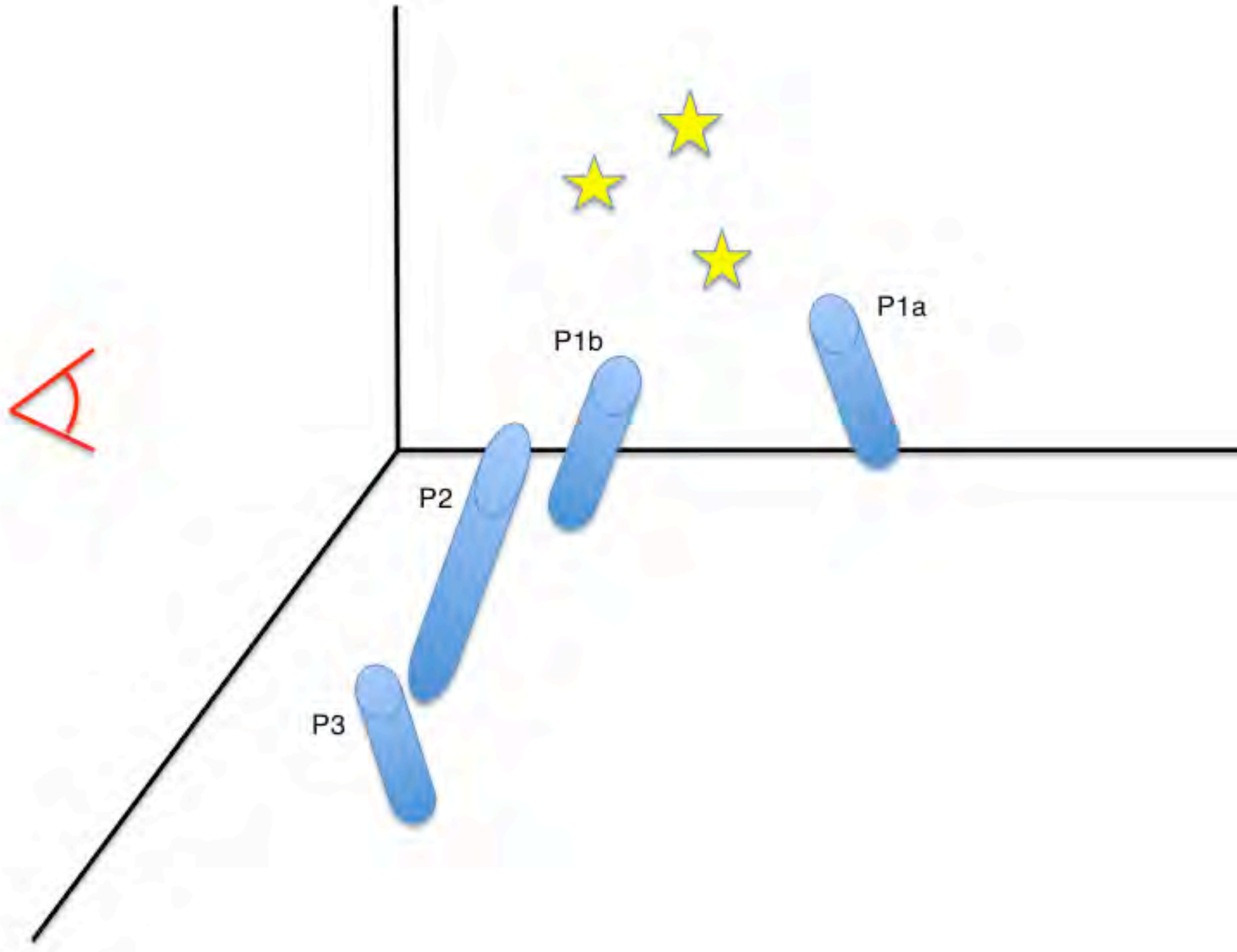




S_{23} parameter as outflow indicator?
Future IFU observations!

A vibrant nebula with teal and orange colors and several bright stars. The nebula is the central focus, showing intricate patterns of gas and dust. The colors range from deep teal to bright orange, with some areas appearing more translucent. Several bright stars are scattered throughout the scene, some with prominent diffraction spikes. The background is a dark, almost black, space.

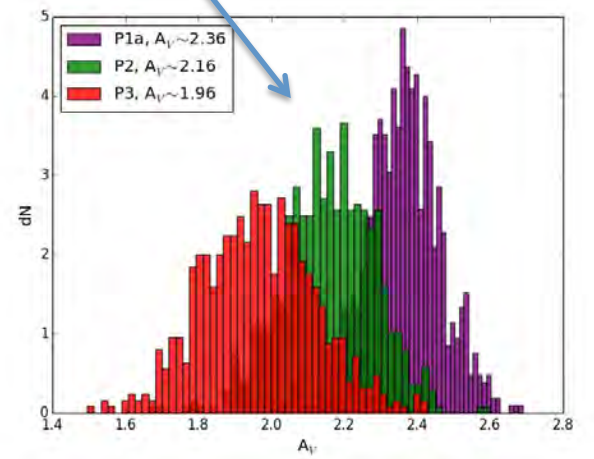
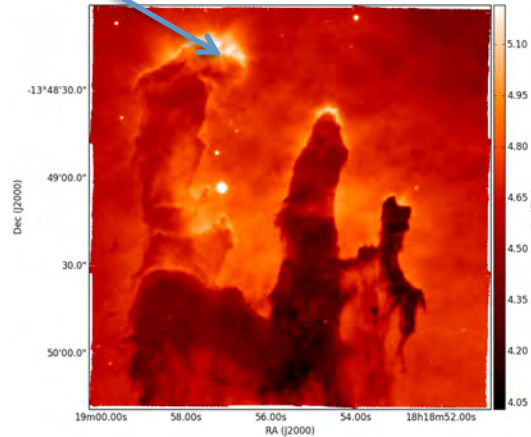
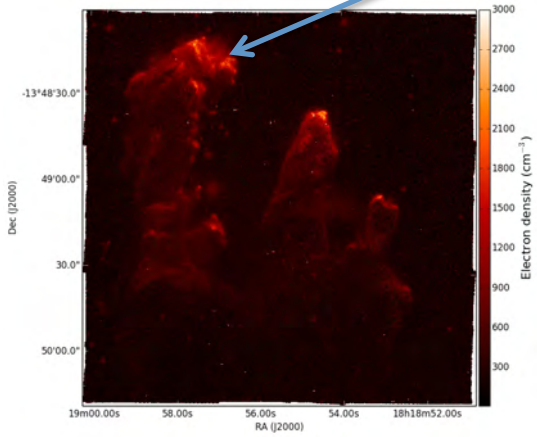
Thank you!



Geometry:

ionization at tips

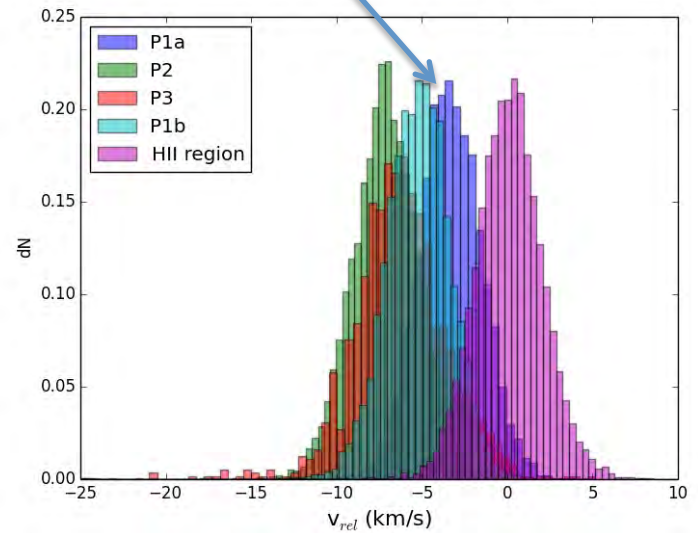
extinction gradient



continuum RGB



$v(P1a) \neq v(P1b)$



[SII] λ 6731 optically thin \Rightarrow $L_{\text{[SII]}\lambda 6731} \propto \# \text{ line-emitting atoms:}$

- compute mass M of line-emitting matter
- $dM/dt = Mv/l \approx 70 M_{\odot} \text{ Myr}^{-1}$
- with $M_{\text{pillars}} \approx 200 M_{\odot} \Rightarrow t \approx 3 \text{ Myr}$