* What target did we pick?
* What do we know about NGC 281?
* What is the evidence for triggered star formation in NGC 281?
* What is the evidence for young stars in NGC 281?

Megeath

NGC 281 has a HII region (ionized atomic hydrogen) and molecular cloud region. Especially interesting is the interface between these regions for studying star formation. UV radiation and stellar winds from young OB stars (HD 5005 trapezium) which are theorized to ionize the molecular gas and ultimately will photoevaporate the clouds. Before they ultimately destroy it however, they may be creating triggered star formation caused by shocks from the photoionized gas.

* Compared data from VLA 20cm data free-free emission in molecular clouds, CO rotational transitions (1.3mm and 2.6 mm), and CS rotational transitions and near-infrared imaging (JK bands, 1 and 2 microns)
* 3 clumps🡪 NW, NE, and S
* NW and NE appear to form a connected structure
* South seems to be independent of the other two
* Emission in the CS lines indicates presence of dense gas.

Clumps not strongly gravitationally bound indicating:

* External pressure
* Shock compression
* Emission from ionized gas in clump. They propose that all three clumps are exposed to UV radiation from OB stars ionizing the NGC 281 nebula.

They find complex kinematic structures in clumps:

* Perhaps ongoing radiation driven implosions (RDIs)
* Complex turbulent motions

Possible reasons:

* OB stars radiatively heating the clumps

Other interesting facts about NGC 281 West

* Also, many low mass stars: Northern sub-cluster and Southern sub-cluster
* Proposed that these are two independent star forming events

More research on:

* RDI versus shock wave triggered formation…?

Guetter

Embedded in NGC281 is IC 1590 a young, galactic cluster with 63 identified probably members. It is a very young (3.5 Myrs) cluster with 22 of the 63 identified as pre-main sequence showing evidence of gravitational contraction. This further supports the evidence for the extreme youth of the cluster and its central trapezium system, HD 5005 which has four fairly hot main sequence O-type stars.

Color-magnitude diagrams of IC 1590 indicate main sequence stars of spectral types O6.5 to B9.5. The pre-main sequence stars detected in IC 1590 have very little variability indicating spectral types ranging from A8/9 to G8. Guetter & Turner suggest that a survey of the nearby class 0,I, II and III embedded protostars should reveal “cluster members of that type.” Indeed, they go on to suggest that “…much information related to the star formation process could be obtained by imaging the field to fainter magnitude limits.” Hershel data should provide the ability to analyze the class 0,I, and II prostars embedded in the nearby molecular clouds of NGC281.