

Star Formation in IC 1613



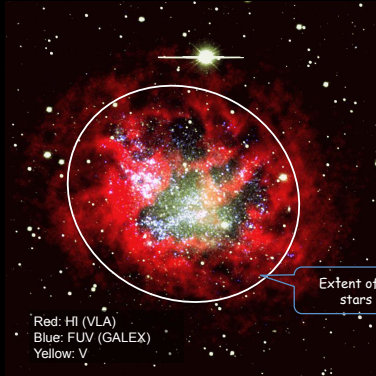
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ABSTRACT

As part of the LITTLE THINGS survey¹ we obtained deep HI spectral line imaging, along with U,B,V, H α and NUV and FUV imaging (GALEX) of IC 1613. We will be using these data to examine the interplay between the neutral gas and star formation in this nearby dwarf galaxy, including cloud formation, as well the formation of the numerous holes and shells in the HI.

¹ <http://science.nrao.edu/science/surveys/littlethings>

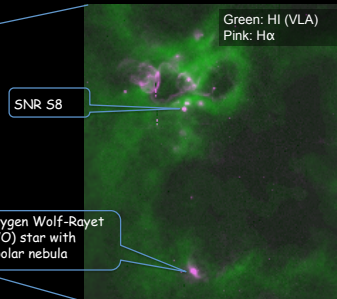
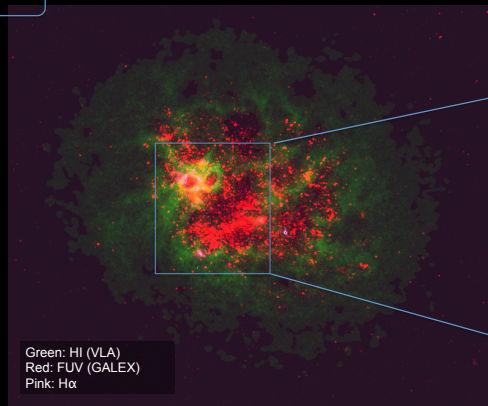


IC 1613 - a normal dwarf

- Local Group Im galaxy
- D = 0.7 Mpc
- Relatively isolated
- $M_V = -14.60$
- Moderate star formation: $0.003 M_{\odot} \text{ yr}^{-1}$



Extent of carbon stars [1,2]



HI Data

- HI spectral line
- VLA B, C, D configurations combined; multiscale CLEAN
- Resolution 28 pc/beam
- Velocity resolution 2.5 km s⁻¹
- HI Mass = $3.37 \times 10^7 M_{\odot}$

Star Formation History - previous work

- Sheet of carbon stars detected [1, 2]
- SFR 3x higher 3-6 Gyr ago [1]
- Many OB associations of various ages [2]
- Optical scale length decreasing with time (SF moving from edges to center) [1], [3], [5]

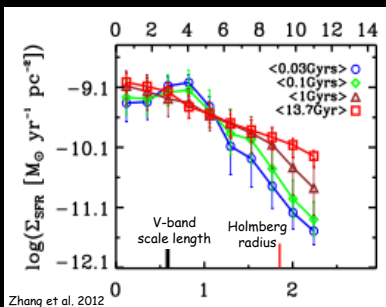
Supershell Formation - previous work

- SF in supershell ~last 30 Myr [4]
- No single large cluster detected [4]
- SF energy not sufficient to form supershell under single-event multiple SNe hypothesis [4]

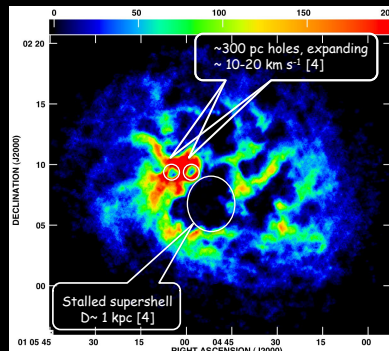
Relationship between SF and HI - current work

- Test models of hole/supershell formation
- Role of radiation pressure vs. mechanical
- Gravitational/thermal instabilities

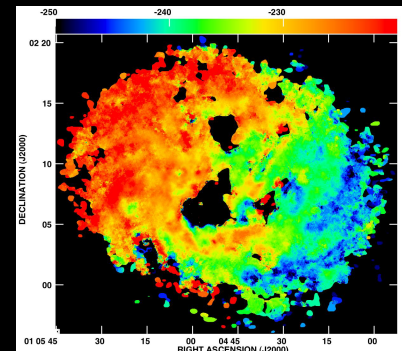
SFR from multi-band SED modeling



Integrated HI flux, BCD combined configuration data



Intensity-weighted HI velocity field, BCD combined configuration data



References

- [1] Skillman et al. 2003, ApJ, 596, 253
- [2] Albert et al. 2000, AJ, 119, 2780
- [3] Borissova et al. 2004, A&A, 413, 889
- [4] Bernard et al. 2007, AJ, 134, 1124
- [5] Sliich et al. 2006, A&A, 448, 123

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