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Team/collaborators

Siwarut Ploydang (NARIT, until Dec. 2017)
Amnart Sukom (NARIT, joined April 2018)

External Collaborators:
Kee-Tae Kim (KASI, South Korea)
A. K. Pandey (ARIES, India)
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M. R. Samal (PRL, India)
K. Ogura (KU, Japan)
Jessy Jose (IISER, Tirupati, India)
Sravani Vaidi (NCRA, Pune)
Galactic Infrared Bubbles

- Radiation pressure from massive stars, stellar wind expansion of HII region form infrared bubbles.

- Churchwell+ 2006, 2007 discovered more than 600 bubbles using Spitzer-GLIMPSE survey images.

- Majority of 102 bubbles were found to be associated with HII regions (Deharveng+ 2010).
Source selection

In Spitzer-Glimpse survey Churchwell et al. 2006, 2007 discovered around 600 IR bubbles.

HII regions associated bubbles from Deharveng et al. 2010.

Distance < 6 kpc

MIPSGAL and cold dust emission

[CPA2006]N69 (RA=18 55 04, Dec=+03 11 30, l=036.186, b=+00.6485) and
[CPA2006]N98 (RA=19 16 46.2, Dec=+12 37 20, l=047.029, b=+00.2200)
Data sources

- ATLASGAL and BGPS
- UKIDSS/2MASS (JHK)
- PAN-STARRS
- IPHAS (irHa)

Spitzer: 3.6 - 24 micron
Herschel: 70-500 micron
KASI TRAO 14m
GMRT: 21, 50 cm
JCMT: 450, 850 micron
GIRB: N98

- Field covered in TRAO (150 Hrs. molecular line) and GMRT (610, 1280 MHz) radio continuum
- Spitzer-IRAC ch2, ch4, MIPS ch1
- For YSOs identification GLIMPSE, MIPSGAL and 2MASS (JHK) survey data were used
N98: TRAO observations

85 - 115 GHz: CO, $^{13}$CO, C$^{18}$O, HCO$^+$, N$_2$H$^+$, CN
Preliminary Results

- The molecular line observations show filamentary structures and detects clumps and cores.

- The youngest YSOs distributed along the filament.

- Cold dust continuum are coincident with PAH emission.

- Preliminary results were presented in NA-Taiwan star formation workshop.

- GMRT radio continuum emission will provide the distribution ionised gas and compact/ultracompact HII regions.
Outlook & future work/events

- Our preliminary results on N98 complex shows ongoing star formation along the filament and majority of the YSOs are concentrated near bubbles.

- Presented our work on N98 in NA-Taiwan star formation conference in Feb 2018.

- Detailed reduction and analysis of the multiwavelength data is under progress and we are expecting to submit a paper on N98 by November 2018.

- With the help of foreign affairs team, Ira and I organised Cloudy workshop in May 2018.

- Will attend “Wonders of star formations” in Edinburg during 3-7 September 2018.

- In next fiscal year Mathew (Master student) from Uni. of Sheffield will join this project.
THANKS!