SOFIA
Science e-Newsletter

November 2018

In this issue:

- Cosmic Collisions: Unraveling the Mysterious Formation of Star Clusters
- Winter AAS Workshop Fee Waived
- Release of First HAWC+ Recipe and S-DDT White Paper
- Upcoming Tele-Talks

Cosmic Collisions: Unraveling the Mysterious Formation of Star Clusters

Paper: The Inception of Star Cluster Formation Revealed by [CII] Emission Around an Infrared Dark Cloud
Bisbas, Tan et al. 2018, MNRAS, 478, L54.

Traditional models claim that the force of gravity may be solely responsible for the formation of stars and star clusters. More recent observations suggest that magnetic fields, turbulence, or both are also involved and may even dominate the creation process. But just what triggers the events that lead to the formation of star clusters? Observations from SOFIA reveal that motion within an infrared cloud offer new evidence that star clusters form through collisions between giant molecular clouds. Read more: *Science Spotlight*
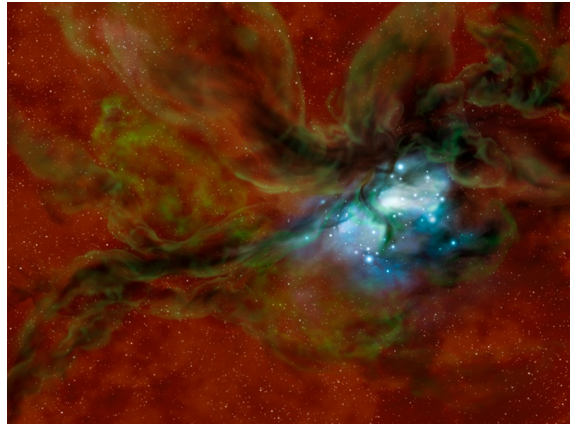
Artist's impression of a star cluster forming from the collision of turbulent molecular clouds (dark shadows), which are surrounded by atomic envelopes seen by SOFIA (green). Image Credit: NASA/SOFIA/Lynette Cook.

Winter AAS Workshop Fee Waived

Sunday, January 6, 2019
8:30 am-5:15 pm PST
Washington State Convention Center, Room 201
Fee: **FREE**

Agenda:
FORCAST 8:30 am-12:00 pm
HAWC+ 1:00–5:15 pm

To ensure that all interested students and scientists attending the 2019 Winter AAS have access to this opportunity, the SOFIA Science Center has waived the registration fee for the workshop. It is critical that
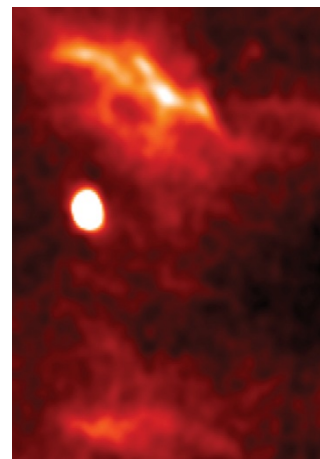
those who are interested in joining the workshop register by **November 14, 2018**. Register for the workshop on the AAS registration page. If you are already registered for the meeting, you may revisit the registration page to add the workshop.

This interactive workshop will introduce participants to advanced analysis techniques utilizing Python to parse and visualize grism spectra with the Faint Object infraRed CAmera for the SOFIA Telescope (FORCAST) and imaging polarimetry data with the High-resolution Airborne Wideband Camera-plus (HAWC+). The guided Python exercises will be geared toward graduate students, early career astronomers, and SOFIA users in general. Participants will be able to receive direct assistance from SOFIA science staff while learning to use the fully reduced data delivered by SOFIA. This is an opportunity both for those who want help with analyzing their existing SOFIA data, and for those interested in learning about data analysis and observing techniques for future observations.

Release of First HAWC+ Recipe and S-DDT White Paper

HAWC+ users and astronomers with an interest in imaging polarimetry have new tools to add to their data science utility belt with the release of the first HAWC+ data cookbook recipe and an associated white paper.

The paper features the Strategic Director's Discretionary Time (S-DDT) program and its first publicly released series: imaging polarimetry of the bright H II region, 30 Doradus. The S-DDT program provides the astronomy community with immediate access to fully reduced observational data of high-impact sources. All raw HAWC+ data, including that obtained for the S-DDT program, is transformed by SOFIA's data reduction pipeline to present guest observers with a product that can be easily visualized and explored. This paper debuts the capabilities of HAWC+ through a qualitative analysis of the data visualizations produced for 30 Doradus, exemplifying the potential scientific virtue of community access to fully reduced polarimetry data.
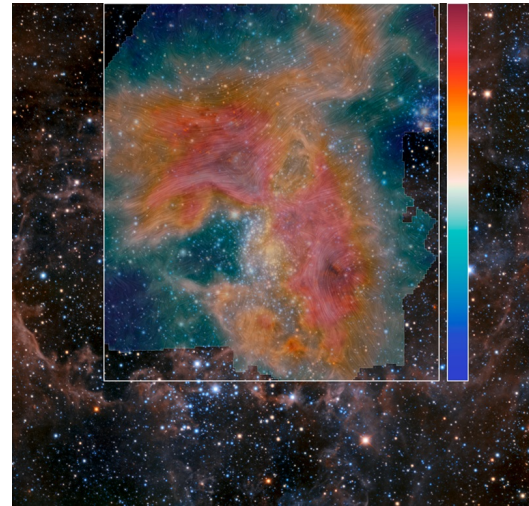
To reproduce the analysis techniques demonstrated in the paper, astronomers can look to the HAWC+ recipe for step-by-step instructions applicable to their own research data. The recipe guides users through Python analysis techniques using the 30 Doradus dataset where readers can probe HAWC+ data cubes and learn basic analysis techniques, such as plotting Stokes parameters, error maps, and polarization vectors to jump-start their own research. This recipe is posted on the SOFIA website and as an interactive Jupyter notebook resource on the SOFIA Github.

SOFIA Data Resources
SOFIA Github
HAWC+ Data Recipe
HAWC+ White Paper

Upcoming Tele-Talks

SOFIA Tele-Talks are scientific presentations given via phone, with slides distributed ahead of time. The talks are targeted broadly towards members of the astronomy community who are interested in SOFIA science and in the current and potential scientific

capabilities of the observatory. The talks are organized by Dan Lester (Univ. of Texas, Austin) and held approximately twice a month on Wednesdays at 9:00am Pacific, noon Eastern.

For information on how to participate in the Tele-Talks, please check the SOFIA Tele-Talk page.

The next Tele-Talks are:

- November 14: Judy Pipher (University of Rochester)
- November 28: Jingzhe Ma (University of California, Irvine)
- December 5: Gordon Stacey (Cornell University)
- December 19: Christopher Materese (NASA GSFC)
- January 30: Jan Simpson (SETI Institute)