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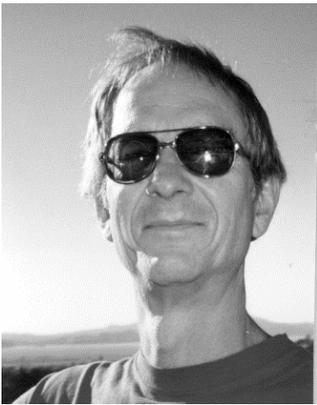
# 国台学术报告 NAOC COLLOQUIUM

**Time: Wednesday 2:30 PM, July 22**    **Location: A601 NAOC**

## On, In, and About Interstellar Superbubbles and Supershells

**Prof. Carl Heiles**

**University of California, Berkeley**

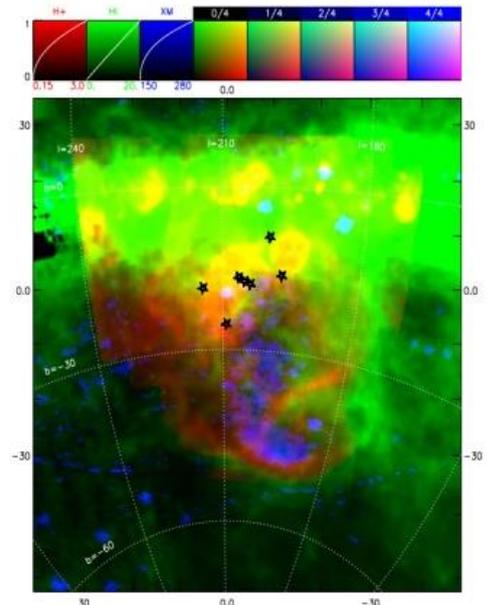


Carl Eugene Heiles is an American astrophysicist noted for his contribution to the understanding of diffuse interstellar matter through observational radio astronomy. He did his undergraduate work at Cornell University, receiving a degree in engineering physics, and then received his doctorate in 1966 from Princeton University in astrophysical sciences. He has worked at the University of California, Berkeley since, and is currently a professor of astronomy. His work involves mapping the Galactic interstellar hydrogen in the 21-cm line using the new seven-element feed array at the Arecibo telescope, a project we fondly call

GALFA and using the Green Bank telescope (GBT) to map Galactic hydrogen and, also, to measure the interstellar magnetic field using Zeeman splitting of the 21-cm line and some other spectral lines.

### Abstract

The structure and dynamics of the diffuse interstellar medium are dominated by large cavities blown up by stellar winds and supernovae, which arise from massive stars. Massive stars have short lifetimes, are born in clusters, and die before the clusters dissipate, so the multiple stars blow the bubbles, which can get very large. We recognize them from their hot interiors and dense shells, which consist of gas swept up by the shock fronts. The shells are visible in the 21-line, the H-alpha line, synchrotron emission, and--amazingly--in Faraday rotation, the details of which reveal complex plasma dynamical processes. The Sun lives within an old cavity, which was originally recognized by diffuse X-ray emission from its interior hot gas and known as the 'Local Hot Bubble'; however much--maybe all--of its purported X-ray emission actually comes from the Earth's heliopause! The Local Bubble's interior is mainly empty except for low-pressure ionized wisps and a high-pressure, extremely cold sheet of neutral gas.



*All are welcome! Tea, coffee, biscuits will be served at 2:15 PM.*