

Diffuse Matter in the Galaxy: Observations Confront Theory -

A Meeting in Honor of the 65th Birthday of Carl Heiles

Arecibo, Puerto Rico, August 29 to September 2, 2004

Program for the Meeting

Important Notes

- **Breakfast** - Breakfast is available at the Rosa del Mar (complimentary with room) and at the El Buen Café (not included with the room). Participants staying at these conference hotels should plan on eating breakfast prior to departure for the observatory site.
- **Registration** - Registration will take place in the Visitors Center and in the Learning Center adjacent to the Visitors Center (See times in the program below.)
- **Scientific sessions** - All scientific sessions will take place in the *Visitors Center Auditorium* (first floor of the Visitors Center). The Visitors Center is located near the top of a hill by one of the observatory towers. Access to the Visitors Center is by foot and by observatory shuttle bus.
- **Electronic presentations** - Speakers using electronic presentations (highly encouraged) are asked to provide their presentations to conference organizers via USB memory stick or CD.
- **Overhead transparencies** - Speakers using overhead transparencies are asked to provide these materials to conference organizers after their presentations. We wish to scan the overhead transparencies and post them on the conference website along with the electronic presentations.
- **Poster sessions** - Poster sessions will take place in the display area on the second floor of the Visitors Center. Posters for the sessions of Monday, August 30 will be installed Sunday evening or Monday morning. We will provide further instructions for installation of posters associated with other sessions.
- **Computer access** - It will be provided to participants in the Learning Center. We will provide browser-equipped computers and Ethernet cables for participants' laptops. (Wireless access is prohibited on the observatory grounds.)

Sunday, August 29

- All day Arrival of non-GLAFA participants at San Juan airport. Participants who have requested bus transportation should pick up their luggage and go to the waiting area next to the US Postal Station (ground level, next to American Airlines terminal). Mr. William Perez (Arecibo staff member, cell phone 787 435-4135) will be there to coordinate bus transportation to Arecibo.
- 7:30-11:30a **Registration** in Visitors Center auditorium for participants staying on-site
- 11:30a **Registration** desk moves to Learning Center adjacent to Visitors Center
- 7:00p Cafeteria closes at the observatory for those staying on-site. (Pizza can be ordered for on-site participants as late as 9:00p.)
- 10:00p Restaurant at El Buen Café closes (other food outlets in the vicinity of the two conference hotels may be open later)

Monday, August 30

- 7:00a Departure of busses from conference hotels for observatory site.
- 7:30a Breakfast in observatory cafeteria for on-site participants
- 8:00a Arrival at observatory of busses from conference hotels
- 7:30-9:30a **Registration** in Visitors Center auditorium
- 9:30a-6:00p **Registration** in Learning Center adjacent to Visitors Center

Diffuse, neutral gas and dust (Chair – W. Reach)

- 8:30-8:45a *Introductory remarks*, Bob Brown, NAIC Director and Sixto Gonzales, Arecibo Observatory Director
- 8:45-9:25a P. Frisch - *Warm partially ionized interstellar gas at the Sun*
- 9:25-9:55a T. Troland - *Properties of the CNM & WNM from Arecibo Millennium HI Survey*
- 9:55-10:10a W. M. Goss - *Time variations in small-scale galactic HI structure toward 3C138*
- 10:10-10:25a S. Stanimirovic - *Does tiny-scale atomic structure exist in the ISM?*
- 10:25-10:35a J. Goldston – *Small scale structures in HI line wings observed at Arecibo*
- 10:35-11:05a **Coffee break** and poster session
- 11:05-11:45a F. Boulanger – *Properties of interstellar dust*
- 11:45-12:00n W. Reach – *Dust in the CNM/WNM*
- 12:00-12:15p D. Finkbeiner - *Microwave ISM emission observed with WMAP and Green Bank*
- 12:15-12:30p E. Churchwell - *Dust in the inner Galaxy: recent GLIMPSE results*
- 12:30-2:00p **Lunch** by the observatory pool

HI/H₂ relationship (Chair – P. Goldsmith)

- 2:00-2:20p S. Gibson - *Cold atomic hydrogen in the Galaxy*
- 2:20-2:35p J. Jackson - *HI in the Galactic Ring Survey (GRS) - theoretical modeling*
- 2:35-2:50p T. Bania - *The distance to molecular clouds via HI self-absorption*
- 2:50-3:00p Discussion of above papers
- 3:00-3:15p G. Ferland - *New models of H₂ formation and dissociation*
- 3:15-3:30p S. Inutsuka - *Transition between HI and H₂ and Generation of IS Turbulence*

- 3:30-3:45p T. Mouschovias - *Ambipolar-Diffusion & Star-Formation Timescales, and the Ages of Molecular Clouds*
- 3:45-3:55p Discussion of above papers
- 3:55-4:20p **Coffee break** and poster session
- 4:20-4:40p L. Blitz - *Conversion of atomic to molecular gas in galaxies*
- 4:40-4:55p P. Goldsmith - *Cold HI within molecular clouds in Taurus*
- 4:55-5:10p J. Ingalls - *Structure of the CNM & the CO filling factor*
- 5:10-5:25p D. Li - *HI & CO observations of the Perseus region*
- 5:25-5:35p Presentations of related poster papers (2 minutes each)
- 5:35-6:00p Discussion of HI/H₂ interface: key theoretical and observational issues
- 6:30-8:00p **Dinner** by the observatory pool
- 8:00-9:00p Rum tasting!
- 9:00p Busses depart observatory for conference hotels

Tuesday, August 31

- 8:00a-12:00n **Excursions** to beach, Camuy Caves or tour of the observatory site (details to be announced)
- 12:30-2:00p **Lunch** by the observatory pool

Warm ionized material & disk/halo interaction (Chair – R. Reynolds)

- 2:00-2:05p R. Reynolds – *Introduction to the session*
- 2:05-2:35p R.-J. Dettmar – *Overview of properties, puzzles, and relation to star formation activity of the WIM/DIG in edge-on galaxies*
- 2:35-3:05p J. Beckman - *Review of observations of the WIM / DIG in face-on galaxies and implications for sources of the ionization*
- 3:05-3:35p L. Haffner - *Discussion of WIM characteristics and implications presented by high spectral resolution emission line studies of the Milky Way*
- 3:35-4:00p D. Stinebring - *Properties of diffuse ionized gas gleaned from pulsar pulse dispersion and scattering*
- 4:00-4:30p **Coffee break** and poster session
- 4:30-5:00p K. Wood - *Overview of photoionization models for the warm ionized medium: successes, failures, predictions, new directions*
- 5:00-5:15p J. Slavin - *Radiation from hot gas - warm gas interfaces and potential implications for the WIM and HVCs*
- 5:15-5:20p D. Cox - *Siphoning gas from the WIM to create the Lockman high-z cloudlets*
- 5:20-5:50p F. J. Lockman - *Review of the properties, implications, and puzzles of the Galaxy's thick neutral and ionized gaseous disk*
- 5:50-6:00p Discussion
- 6:30-8:00p **Dinner** by the observatory pool
- 8:00-9:00p Beer by the pool (no host)
- 9:00p Busses depart observatory for conference hotels

Wednesday, September 1

- 7:00a Departure of busses from conference hotels for observatory site
7:30a Breakfast in observatory cafeteria for on-site participants
8:00a Arrival at observatory of busses from conference hotels

Hot interstellar material (Chairs - D. Cox & R. Shelton)

- 8:30-8:45a D. Cox – *Introduction and overview of the local hot gas*
8:45-9:05a S. Snowden – *Hot gas components in the Galaxy - what we know and what we don't know*
9:05-9:25a R. Shelton – *What we thought we knew about the local hot gas from OVI observations and what we now know*
9:25-9:45a D. Bowen – *Distribution of OVI-rich gas in the galactic disk*
9:45-10:05a J. Edelman – *Emission from highly ionized gas seen by SPEAR*
10:05-10:25a S. Bowyer – *How the local ISM has led research on clusters of galaxies into a fantasy world*
- 10:25-10:55a **Coffee break** and poster session
- 10:55-11:15a Y-H. Chu – *Shells and the ISM with comments on theory*
11:15-11:40a J. Slavin – *Theories of the origins and evolution of hot gas*
11:40-11:50a D. Cox – *Does theory have anything useful to say about this?: the current state of the confrontation between theory and observations of hot gas*
11:50-12:30p Group discussion led by C. McKee
- 12:30-2:00p **Lunch** by the observatory pool

Magnetic fields (Chairs – E. Zweibel & T. Troland)

- 2:00-2:15p E. Zweibel & T. Troland - *Questions to be addressed and magnetic field measurement techniques*
2:15-2:45p J. Han – *A new model for Galactic magnetic fields*
2:45-3:05p A. Deshpande - *Large-scale structure Galactic magnetic field & Faraday tomography*
3:05-3:30p C. Heiles - *Arecibo Millennium Survey statistics of magnetic field, column density and turbulence in the CNM*
3:30-3:55p R. Crutcher - *Magnetic fields in molecular clouds*
- 3:55-4:20p **Coffee break** and poster session
- 4:20-4:40p F. Heitsch - *Numerical studies of magnetic flux transport in the interstellar medium*
4:40-5:00p E. Vazquez-Semadeni - *Core lifetimes and the star formation efficiency in turbulent, magnetized molecular clouds*
5:00-5:20p B. Gaensler - *The magnetic field of the Magellanic Clouds*
5:20-5:40p R. Taylor - *Observations of the galactic magnetic field from the IGPS*
5:40-6:00p M. Haverkorn - *A new window on magnetic fields and turbulence*
- 6:30-8:00p **Conference banquet** by the observatory pool

- 8:00-9:30p A video about Carl Heiles and other remarks and events
9:30p Busses depart observatory for conference hotels

Thursday, September 2

- 7:00a Departure of busses from conference hotels for observatory site
7:30a Breakfast in observatory cafeteria for on-site participants
8:00a Arrival at observatory of busses from conference hotels

SNRs, shells & supershells (Chairs Y-H. Chu and M. Mac Low)

- 8:30-8:40a A. Goodman – *The impact of ("less-than-super") shells on star-forming molecular clouds*
8:40-8:55a C. Cappa – *HI bubbles around O and WR stars*
8:55-9:25a J. Arthur – *A critical review of theoretical models of bubbles/superbubbles, theory vs. observations*
9:25-9:40a V. Dwarkadas - *When supernovae explode inside bubbles*
9:40-10:00a Discussion
10:00-10:10a C. Brogan - *A radio survey of SNRs in the Galaxy*
10:10-10:25a B-C. Koo – *SNR HI shells*

10:25-10:55a **Coffee break** and poster session

10:55-11:05a R. Sankrit - *What UV observations tell us about SNR shocks and structure*
11:05-11:15a K. Tomisaka - *How magnetic fields affect the SNR evolution*
11:15-11:35a Discussion
11:35-11:50a J. Palous - *The identification and formation of large HI shells*
11:50-12:10p N. McClure-Griffiths - *The role of large shells in the galactic ecosystem*
12:10-12:30p Discussion

12:30-2:00p **Lunch** by the observatory pool

Global models of the ISM (Chair - E. Vazquez-Semadeni)

- 2:00-2:25p A. Lazarian - *MHD turbulence and how to study it using observations*
2:25-2:50p E. Vazquez-Semadeni - *ISM dynamics from global simulations*
2:50-3:05p A. Gazol - *The response of the thermal pressure in neutral gas to turbulent velocity fluctuations*
3:05-3:20p P. Hennebelle - *Thermal condensation in atomic hydrogen driven by turbulence*
3:20-3:35p K. Wada - *Gravity-driven and spiral shock-driven turbulence in the galactic central region*

3:35-4:05p **Coffee break** and poster session

4:05-4:20p C. Heiles - *View of the global ISM from theory and observations (panelist 1)*
4:20-4:35p M. Mac Low - *View of the global ISM from theory and observations (panelist 2)*
4:35-5:20p Panel discussion

6:30-8:00p **Dinner** by the observatory pool
8:00-9:00p Beer by the pool (no host)
9:00p Busses depart observatory for conference hotels