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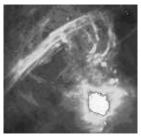

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THE CENTRAL PARSECS

G98

GALACTIC CENTER WORKSHOP

TUCSON, 7 - 11 SEPTEMBER 1998

Official logo of the next Galactic Center Workshop, featuring the mini-spiral and Sgr A*

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Editorial: Galactic Center Workshop '98

Angela Cotera, Heino Falcke & Fulvio Melia

Recent conferences specializing on research done in the Galactic Center (4th ESO/CTIO Workshop, March 10-15, 1996; IAU Symposium 184, August 18-22, 1997) have presented a large variety of observational results on the inner several hundred parsecs of the Galaxy, at all available wavelengths, and with all available techniques. Although these meetings have successfully helped to distribute recent research results, and have highlighted the enormous growth in the quality and quantity of data available, little time has been available to discuss the impact of the results or to attempt to reach a consensus within the community on numerous controversial issues. Therefore, in conjunction with several colleagues, we are in the process of organizing a workshop on Galactic Center research in **Tucson, Arizona, September 7-11, 1998**, jointly sponsored by the SFB 328 (Heidelberg) and Steward Observatory, for the express purpose of facilitating a broad discussion between observers and theorists on the newly available data and possible interpretations. The focus of the workshop will be on issues concerning the inner 100 parsecs of the Galaxy, and will center on a number of controversial topics currently being studied within the GC community. We will therefore deviate from the conventional conference format by reserving 40% of session time for facilitated discussions.

Preparations for the workshop are well underway. We have assembled both our Scientific Organizing Committee (SOC) and Local Organizing Committee (LOC), booked the meeting rooms, worked out the costs, and established the topics of all the sessions. We are currently in the process of choosing and inviting the speakers, although many senior scientists in the field have already agreed to attend.

We will hold ten sessions, each designed to address a specific question such as: How do we reconcile models and observations of Sgr A*? The talks will be followed by 30 minutes of directed discussion. The session leaders will have prepared discussion outlines to insure the discussions proceed smoothly and consistently. In addition, workshop participants who are presenting their work in the poster sessions, will be encouraged to bring overheads and/or slides of their latest results as well; thus all the results presented in the poster sessions can be used during the discussions to illustrate whatever point a workshop participant is trying to make. Each day will end in a scheduled one hour discussion session. During this time, topics covered throughout the day and throughout the workshop, can be revisited in light of more recent talks and will hopefully promote both understanding of current research and facilitate the formation of new ideas to be researched after the conclusion of the workshop.

In order to create an atmosphere which is conducive to extensive discussion, the workshop will be held just north of Tucson at the Sheraton El Conquistador. In addition, the workshop will be strictly limited to 60 participants as meaningful discussions with more than 60 is impossible. The workshop fee has been set at $250. Additional information on the workshop can be found at our newly created web site **http://www.mpifr-bonn.mpg.de/gc98/**. Since the workshop is limited to 60 participants, we will not be able to include all interested participants; therefore we will be using the submitted abstracts to assemble a well-balanced and relevant program. We hope to encourage attendance by young researchers and therefore have applied to the NSF for funding for 15 graduate students and/or postdocs: monetary support will be based entirely on need. Publication of workshop proceedings are planned. A deadline for registration and the submission of abstracts has not been set yet, but applications for participation are already being accepted. Please consult the web page for additional details concerning the conference.

Session Topics

- What is the Central Mass Concentration, and what is the spectrum of Sgr A*?
- How do we reconcile models and predictions for Sgr A*?
- What is the luminosity of the GC and what produces it? How much do we see directly and what do we infer indirectly?
- What are the underlying causes of the mor-

phology of Sgr A West: how are the various components of Sgr A West related?

- How transient is the current morphology of the central few parsecs? What is long-lived and what is being viewed at a special time?
- How, when, where, and why are stars formed in the GC?
- What is the supernova rate and how does this effect the metalicity and star formation?
- How do the various components in the inner 100 parsec interact with each other?
- What is the strength of magnetic field in the GC and what are its large and small scale effects?
- How "standard" is the central region of our Galaxy? What would the GC look like from 1 Mpc?

Scientific Organizing Committee

Co-Chairs:

Angela Cotera	Heino Falcke
Wolfgang Duschl	Fulvio Melia

SOC:

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Marcia Rieke	Yoshiaki Sofue
Kris Sellgren	Farhad Yusef-Zadeh

This issue

Besides the announcement of the conference, we again have a number of new and interesting abstracts. Radio astronomy clearly dominates this list: from molecular line observations to mm-observations of Sgr A*. Again we have also solicited an article on an important topic in GC research. Susanne Hüttemeister member of a collaboration which has performed a large $C^{18}O$ survey of the GC region will try to answer the naive questions of the editors: What are all these surveys of the molecular gas in the GC region good for? What have we learned from them? As usual we have asked for the impossible: comprehensive but concise and short — which we think she has achieved and therefore we can wholeheartedly recommend the following article to molecular line lovers and loathers alike.

Surveys of molecular gas in the Galactic center region:

On the usefulness of tedious projects with moderate-sized telescopes

Susanne Hüttemeister, *Radioastronomisches Institut, Bonn University*

A different type of molecular ISM

The molecular interstellar medium (ISM) in the central region of our Galaxy is distinctly different from what is found in the Galactic disk. There, molecular clouds are usually classified as Giant Molecular Clouds (GMCs, H_2-density $\sim 10^2$cm^{-3}, temperature $\sim$ 20K), often with central denser and warmer 'hot cores' associated with regions of massive star formation, or quiescent and cold 'dark clouds' (density $\geq 10^4$cm^{-3}, temperature $\sim$ 10K). The molecular ISM in the inner $\sim$ 500pc of the Galaxy, called the *Central Molecular Zone* (CMZ) by e.g. Morris & Serabyn (1996), is it on average, denser, warmer and more turbulent than a typical disk GMC. This is evident from linewidths that are about a factor of 10 wider than those of disk clouds, highly excited molecular states and rare molecular species that are readily detected in the GC clouds. Even though the mass estimate recently had to be corrected downward, the gas in the CMZ is still the largest and densest concentration of molecular material in the Galaxy.

Star formation activity in the Galactic center (GC) region is presently not impressive, at least outside a few special locations, first and foremost SgrB2. Still, the ISM in this region may be a nearby 'laboratory for starburst galaxies' just as the rather quiescent SgrA* has been called a laboratory for AGN (Mezger et al. 1997), sharing at least some characteristics with its far more active extragalactic cousins. Thus, understanding the unique properties of the ISM in the GC region is not only important in its own right but also has the potential to influence and challenge our conclusions about objects that are too far away to study at high spatial resolution and/or to observe in lines from rarer molecular species.

Tedious but necessary: Surveys

Surveys of the GC region, even at the very moderate resolution of a few arcminutes, take a lot of time: comparatively small telescopes are used for months or even years of routine observations. The resulting data are, however, the base on which our understanding of the behaviour of the $\sim 3 \cdot 10^7 M_\odot$ of material in the CMZ and, if we take the extragalactic analogy seriously, the gas in an increasing number of galactic bulges, is relying.

Since the main constituent of molecular clouds, H_2, lacks a permanent dipole moment, molecular gas that is not hot enough to excite vibrational (infrared) H_2 transitions — only very exceptional clouds manage this — has to be detected in 'tracer molecules'. The most abundant of those, and thus the workhorse of molecular spectroscopists, is the main isotope of carbon monoxide, ^{12}CO, with a relative abundance to H_2 of $\sim 10^{-4}$. Most maps of molecular gas distributions in the Milky Way and, even more pronounced, in external galaxies, are taken in the rotational $J = 1 \rightarrow 0$ transition of this molecule at 115GHz (2.6mm). CO also has the advantage of being easily excited even at low gas densities of only $\sim 10^2 \mathrm{cm}^{-3}$. Thus, it traces almost all molecular gas.

Why isn't it, then, sufficient to survey the CMZ — and external galaxies — once in ^{12}CO and be done with it? Inspection of the images obtained by surveys in a number of molecules and transitions readily provides the answer: The gas distribution looks very different, depending on what species and what excitation state is used. ^{12}CO $1 \rightarrow 0$ maps (see Bitran et al. and Jackson et al. 1996 for recent examples) tell us the morphology of molecular gas of all kinds — and little else. It is striking how little contrast is seen in ^{12}CO: These images let the observer question the concept of distinct molecular clouds in the GC. And this is, indeed, an important insight: ^{12}CO picks up (among other things) a diffuse 'intercloud medium', that, in the GC, is molecular rather than atomic. To get to the physical meat of the matter, the density and temperature distribution of the gas, multilevel studies, isotope studies and surveys in rarer, weaker molecular species are required. Since a field of at the very least $5^\circ \times 2^\circ$ has to be covered, this makes for fairly tedious work, and it sometimes seems that more data have been accumulated for the nuclear regions of some external galaxies than for our GC.

The target: physical conditions and dynamics

Both multilevel and isotopomer studies are easiest in CO, and have, therefore, so far only been done in CO lines, at least for the entire CMZ: Oka et al. (1996, 1998) have observed the ^{12}CO $2 \rightarrow 1$ transition with a resolution exactly matching the $1 \rightarrow 0$ line mapped in the famous Columbia/Tololo 'Mini' Surveys of the molecular Milky Way, of which the Bitran et al. data (published independently a little belatedly) are a part. The Northern and Southern 'Mini' telescopes have a diameter of 1.2m. Consequently, the telescopes built for the $2 \rightarrow 1$ survey (again, there is a Northern and a Southern one) have a diameter of 60cm — thus countering the notion that new telescopes have, necessarily, to be larger than their predecessors. In this case, small is quite beautiful! ^{13}CO $1 \rightarrow 0$ data have been provided by Bally et al. (1987), who also mapped CS (at the 7m Bell Labs telescope). Dahmen et al. (1997) provided a survey of the rare isotopomer C^{18}O, again carried out with the Southern 'Mini'.

As an example for the usefulness of such multiline surveys, let us consider the case of the 'conversion factor': An analysis of line ratios clearly demonstrates the traps one can fall into if one considers only one line. A 'standard' factor to convert integrated ^{12}CO $1 \rightarrow 0$ intensity to H_2 column density has been established (by Strong et al. 1988 and in intense discussions in the subsequent years, for clouds in the disk of the Galaxy). This infamous quantity has been very widely used to determine gas masses in external galaxies, often in the central regions — in many cases, out of desperation since measurements of lines other than ^{12}CO $1 \rightarrow 0$ are exceedingly difficult. In an analysis of line ratios, we (Dahmen et al. 1998) could show that not only has the 'average' conversion factor to be lowered for the GC region by a factor of almost 10 — the situation is even worse: There is *no simple causal connection* between ^{12}CO $1 \rightarrow 0$ line intensity and H_2 column density. It is the otherwise convenient fact that the ^{12}CO $1 \rightarrow 0$ transition is so easily excited even at low gas densities that wreaks havoc here: A very significant amount of the total brightness of the emission arises from a thin, warm, unbound gas component that contributes little to the mass and *does not exist in Galactic disk clouds*. The presence of this component is tied to the special conditions in the GC region: large tidal forces and tri-axial (i.e. bar) potentials lead to shocks and cloud-cloud collisions that disrupt the material and leave part of it in a 'diffuse', unbound state. We have every reason to believe that these processes also work in the centers of external galaxies — only very desperate people should turn to 'standard conversion' to determine gas masses in these regions anymore. It was only the combination of large scale surveys of the GC region, where the clouds can be resolved on pc scales, that made clear not only *that* 'standard' CO–H_2 conversion breaks down under Galactic center conditions, but also *why* this is the case.

Of course, molecular surveys are also used to trace the *dynamics* of the gas in the potential of the GC region, which is defined by the stellar component. Over the last years, a bar potential has become the by far most popular model to explain the unique kinematics (e.g. the large non-circular motions) observed. Again, surveys in different molecular species and transitions help to clarify matters, by pointing out regions of high and low density, helping to locate shocks and regions of peculiar chemistry.

What should be next?

Higher resolution? Very high resolution surveys of the entire CMZ on the scale of a few arcseconds resolution are still out of reach at this time, though the advent of array receivers for millimeter spectroscopy might change that situation in the future (see the ^{12}CO/HCN survey of Jackson et al. (1996) obtained with the 15-element QUARRY receiver for a first taste of the capabilities of arrays in the future). The gas in the CMZ only reveals its true complexity at scales of 1-2pc or smaller (angular resolution of $\leq 40''$). On these scales, multilevel studies of many molecules uncover exotic cool cores with hot core-like chemistry, embedded in a warm, thin molecular medium and subject to shocks, a type of ISM seen nowhere else in the Galaxy, intimately tied to the large scale dynamics of the the CMZ (Hüttemeister et al. 1998). What we would see if we could survey the entire CMZ on this scale is unknown — and will remain so for at least some years to come.

More molecules? Molecules other than CO (CS, HCN, and — on a slightly smaller scale — SiO (Martin-Pintado et al. 1997) and HNCO (Dahmen et al. 1997) have already been surveyed) need higher gas densities to become excited and thus trace different components of the ISM. Some species, like SiO and HNCO, that are very rare or are seen only under very special conditions in confined region in the Galactic disk are widespread and abundant in the CMZ. It is, of course, tempting to imagine having at least medium resolution data of them all: the CO isotopomers for general gas properties, CS and HCN as 'all purpose' tracers of gas at higher densities ($\geq 10^4$cm^{-3}), HCN's isomer HNC as a tracer of cool and quiescent gas, CH_3OH as an indicator of hot, dense material, SiO, SO and SO_2 for shocks, the radical CN to locate region of enhanced UV field, i.e. photodissociation regions, the molecular ion HCO^+ to point out regions with high cosmic ray flux ... the list could go on for quite a while. And of course one can only *really* analyze the data if one has more than one transition for each molecule.

In the absence of a dedicated survey telescope in the $\sim$ 10m class with an array receiver, this will clearly remain a dream for many years to come. However, one should keep in mind that for some external galaxies, e.g. the prototypical starburst NGC253, we are approaching a situation where most of the molecules above mentioned have been observed, many interferometrically at high resolution. To have a 'baseline' for understanding these observations, further efforts in mapping the CMZ are certainly needed, even if the projects are time-consuming and, at least at first look, 'routine'. As time passes, more data will become available — till then, it will help the efforts of everyone working in this field if survey data are published timely and readily made available in digital form to the community (at least on request). A single one-line survey will provide only very limited new information — pointing out for yet another time that the gas distribution is asymmetric, dynamically consistent with a bar and that the gas is, on average, rather dense and warm, is not very original anymore. The true value of new surveys will become apparent in an analysis in the context of what already exists.

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Abstracts

Molecular gas in the Galactic center region III. Probing shocks in molecular cores

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Multiline observations of $C^{18}O$ and SiO isotopomers toward 33 molecular peaks in the Galactic center region, taken at the SEST, JCMT and HHT telescopes, are presented. The $C^{18}O$ presumably traces the total H_2 column density, while the SiO traces gas affected by shocks and high temperature chemistry. The $J = 2 \rightarrow 1$ line of SiO is seen only in few regions of the Galactic disk. This line is easily detected in all Galactic center sources observed. A comparison of the strength of the rare isotopomers ^{29}SiO and ^{30}SiO to the strength of the main isotopomer ^{28}SiO implies that the $J = 2 \rightarrow 1$ transition of ^{28}SiO, is optically thick. The isotope ratio of $^{29}Si/^{30}Si$ of 1.6 in the Galactic center clouds is consistent with the terrestrial value. Large Velocity Gradient models show that the dense component ($n_{H_2} \geq 10^4 cm^{-3}$) in typical molecular cores in the Galactic center is cool ($T_{kin} \sim 25$ K), contrary to what is usually found in Giant Molecular Clouds in the disk, where the densest cores are the hottest. High kinetic temperatures, > 100 K, known to exist from NH_3 studies, are only present at lower gas densities of a few $10^3 cm^{-3}$, where SiO is highly subthermally excited. Assuming that $C^{18}0$ traces all of the molecular gas, it is found that in all cases but one, SiO emission is compatible with arising in gas at higher density that is (presently) relatively cool. The relative abundance of SiO is typically 10^{-9}, but differs significantly between individual sources. It shows a dependence on the position of the source within the Galactic center region. High abundances are found for the locations bar potential models predict for preferred collision regions. These results can be used to relate the amount of gas that has encountered shocks within the last $\sim 10^6$ years to the large scale kinematics in the inner ~ 500 pc of the Galaxy.

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Discovery of X–rays from the composite supernova remnant G0.9+0.1 with the *BeppoSAX* satellite

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Using the *BeppoSAX* satellite we have obtained the first secure X–ray detection of the supernova remnant G0.9+0.1. The 1–10 keV spectrum can be described with an absorbed power law with $\alpha \sim 3$ and $N_H \sim 3 \times 10^{23}$cm^{-2}. The high column density supports a distance similar to that of the Galactic Center. The X-ray emission, with a luminosity $L_X \sim 10^{35} d_{10}^2$ erg s^{-1}, coincides with the central radio core, confirming the composite nature of this remnant. Though a search for periodic pulsations gave a negative result, the observed X–rays are probably related to the presence of a young radio pulsar at the center of G0.9+0.1.

A&AL, in press
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SiO Maser Forest at the Galactic Center

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A moderately deep survey of stellar maser sources toward the Galactic center has been made in the SiO J=1-0 v=1 and v=2 transitions (43 GHz) with the Nobeyama 45-m telescope of a beam size of about 40″. At the Galactic center (Sgr A*), 7 (4 new) SiO maser sources were detected in one beam. In order to investigate the spatial distribution of SiO maser sources, we have also observed the offset positions by ± 40″ in Galactic longitude from the Galactic center. In total, 7 (4 new) SiO maser sources were detected at the offset positions. Taking into account the shorter integration time at the offset positions, we find that the surface number density of SiO maser sources is nearly constant at the Galactic center. The number density of SiO maser sources is found to be an order of magnitude higher than the density of OH 1612 MHz objects. A radial-velocity gradient in Galactic longitude was not detected. These facts indicate that the SiO maser sources seen toward the Galactic center are mostly associated with the stellar population of a Galactic stellar nuclear disk of more than a few arc minute radius.

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The simultaneous spectrum of Sgr A* from λ20cm to λ1mm and the nature of the mm-excess

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We report results from a multiwavelength campaign to measure the simultaneous spectrum of the super-massive black hole candidate Sgr A* in the Galactic Center from cm to mm-wavelengths using the VLA, BIMA, the Nobeyama 45m, and the IRAM 30m telescopes. The observations confirm that the previously detected mm-excess is an intrinsic feature of the spectrum of Sgr A*. The excess can be interpreted as due to the presence of an ultra-compact component of relativistic plasma with a size of a few Schwarzschild radii near the black hole. If so, Sgr A* might offer the unique possibility to image the putative black hole against the background of this component with future mm-VLBI experiments.

ApJ, in press
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7 mm λ VLBA Observations of Sagittarius A*

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We present 7 mm λ VLBA observations of the compact nonthermal radio source in the Galactic Center, Sgr A*. These observations confirm the hypothesis that the image of Sgr A* is a resolved elliptical Gaussian caused by the scattering of an intervening thermal plasma. The measured major axis of Sgr A* is 0.76 ± 0.04 mas, consistent with the predicted scattering size of 0.67 ± 0.03. We find an axial ratio of 0.73 ± 0.10 and a position angle of $77° \pm 7°$. These results are fully consistent with VLBI observations at longer wavelengths and at 3 mm λ. We find no evidence for any additional compact structure to a limit of 35 mJy. The underlying radio source must be smaller than 4.1 AU for a galactocentric distance of 8.5 kpc. This result is consistent with the conclusion that the radio emission from Sgr A* results from synchrotron or cyclo-synchrotron radiation of gas in the vicinity of a black hole with a mass near $10^6 M_\odot$.

ApJL, accepted

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The nature of OH/IR stars in the galactic centre

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We report on infrared observations of stars in a field of $30'$ near the galactic centre. All these objects were previously detected as OH (1612 MHz) maser sources. For a large fraction of these stars variability data are available from a VLA monitor programme. This makes it possible to correct the IR measurements for variability. Corrections for interstellar extinction are also applied. The resulting infrared colours, periods and luminosities are compared with results for other samples of OH/IR stars and it is shown that the galactic centre stars are similar to the same type of objects in the bulge of the Galaxy but that more luminous (and thus younger) stars exist in the centre. The question of the existence of two distinct populations of OH/IR stars near the galactic centre is addressed, but the limited number of stars inhibits a firm conclusion. We do find that when the sample is divided according to OH expansion velocity, the dust-to-gas mass loss ratio, which depends on metallicity, is on average twice as high for the high expansion velocity group as for the low expansion velocity stars. The luminosities and the number density of the low expansion velocity stars are consistent with them being an extension of the bulge population, whereas the high expansion velocity group contains brighter sources and is more likely to be a population intrinsic to the galactic centre. The previously proposed period-luminosity (PL-) relation for OH/IR stars can be studied with this sample. We find that the OH/IR stars significantly deviate from the PL-relation and argue that the OH/IR stars have evolved away from the PL-relation. It was found that non-variable OH/IR stars are often associated with peculiar IR sources.

A&A, 329, 991

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http://link.springer.de/link/service/journals/00230/bibs/8329003/2300991/small.htm

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G359.87+0.18: A Young SNR Candidate Near the Galactic Center?

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Sub-arcsecond radio continuum observations of the Galactic center region at λ6 and 2cm reveal a 0.5″ diameter source with a shell-like morphology. This source is linearly polarized at a level of 16% at λ6cm and has a steep nonthermal spectrum with spectral index 1.6 between λ6 and 2 cm. The distance to this source is not known but the large rotation measure value of 3000 rad m^{-2} suggests that G359.87+0.18 is likely to be located in the inner Galaxy or at an extragalactic distance. We discuss possible interpretations of this object as a recent supernova, a very young supernova remnant, a nova remnant, or an extragalactic source. All possibilities are highly problematic.

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Proper Motions of Ionized Gas at the Galactic Center: Evidence for Unbound Orbiting

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We present radio continuum observations of the spiral-shaped ionized feature (Sgr A West) within the inner pc of the Galactic center at three epochs spanning 1986 to 1995. The VLA A-configuration was used at λ2cm (resolution of $0.1'' \times 0.2''$). We detect proper motions of a number of features in the Northern and Eastern Arms of Sgr A West including the ionized gas associated with IRS 13 with V(RA)= 113±10, V(Dec)=150±15 km s^{-1}, IRS 2 with V(RA)= 122±11, V(Dec)=24±34 km s^{-1} and the Norther Arm V(RA)= 126±30, V(Dec)=–207±58 km s^{-1}. We also report the detection of features having transverse velocities >1000 km s^{-1} including a head-tail radio structure, the "Bullet", $\sim$4″ northwest of Sgr A* with V(RA)= 722±156, V(Dec)=832±203 km s^{-1}, exceeding the escape velocity at the Galactic center.

The proper motion measurements when combined with previous H92α radio recombination line data suggest an unambiguous direction of the flow of ionized gas orbiting the Galactic center. The measured velocity distribution suggests that the ionized gas in the Northern Arm is not bound to the Galactic center assuming a 2.5 million solar mass of dark matter residing at the Galactic center. This implies that the stellar and ionized gas systems are not dynamically coupled, thus, supporting a picture in which the gas features in the Northern Arm and its extensions are the result of an energetic phenomenon that has externally driven a cloud of gas cloud into the Galactic center.

ApJ Letters, accepted
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And Finally ... !

- **Our web internet address has changed!** You can find our web site at http://www.mpifr-bonn.mpg.de/gcnews and our email address now is gcnews@mpifr-bonn.mpg.de. Please note that automatic forwarding is installed and the old address at astro.umd.edu will remain valid as well. We are grateful to the Max-Planck-Institut für Radioastronomie for allowing us to use their internet access which is the vital basis for our enterprise. The new workstation used, at least in part, as the server for GCNEWS is funded by the Deutsche Forschungsgemeinschaft (DFG) under grant Fa 358/1-2.
- If you would like to **volunteer** to write an article for any of the upcoming GCNEWS newsletter, please let us know. We are always on the look out for interesting, timely research being done in the Galactic Center.
- We have not, to date, received **abstracts for Ph.D. Theses**. We hope recent graduates will utilize this forum to share their Ph.D. work. Up to one page per abstract and a small figure can be accommodated.

- Aside from the growing number of "don't work, get rich" emails (as if someone who has chosen to become an astronomer would have any understanding of this concept) we have received a note informing us about the receipt of a "prestigious" award:

Congratulations!
Your site: http://www.astro.umd.edu/ gcnews/ has been selected as a featured site in StudyWeb as one of the best educational resources on the Web by our researchers. It can be found in our Astrophysics section. We invite you to display the prestigious "StudyWeb Excellence Award" icon, which is only offered to sites included in the StudyWeb directory. It is available at: http://www.studyweb.com/about/swaward.htm. We would appreciate it if you would link the icon back to our homepage.

After researching the matter, we couldn't shake the impression that virtually everyone who is remotely associated with academia is featured by this "search engine" and gets this award — obviously they are looking for free internet advertisement. On the other hand, the icon might be useful to impress a naive soul who is visiting *our* site; so, we will keep mum and not divulge the dubiousness of the honor ... their icon can be found at the bottom of our home page.

- In the last issue we reported about the creative method one of our subscribers, Eric Shulman, invented to job hunt through the email "vacation" program. He has sent us his feed back soon thereafter:

Alas, no one called The Inn at Harvard Square to offer me a tenure-track position while I was visiting Cambridge. I'll let you know if future vacation messages are more effective.

Still, it was worth a try.

- Finally, as you know, we often receive questions from beyond the inner circle of professional astronomers, occasionally way beyond:

Hi there,
... where exactly .... as in "exactly" is the galactic center located in Sagittarius? Your answer would help me out a great deal. I had it recorded somewhere about a year ago but... in my file clearing blew it off my hard drive.

XYZ (Name deleted) – Esotercist, Astrologer, and Healer, Member: Int. Academy of Esoteric Asstrology
Interested in Free Distance Reiki Healing, Astrology or Esoteric Infusion?
Please visit The Reflectory...http://....

In this case the answer was straight forward (17h 45m 40.045 -29d 00m 27.9s in J2000 coordinates from 3mm VLBI by Rogers et al. 1994, ApJ 434, L59) and polite as we are, we did not comment on the 'Asstrology' typo. Instead, inspired by this email, we were wondering whether "Free Distance Reiki Healing" might eventually cure Sgr A* of its apparent anorexia (refusal to eat...nearby stars that is!) — observers watch out!

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