THE HOT STAR NEWSLETTER

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An electronic publication dedicated to A, B, O, Of, LBV and Wolf-Rayet stars and related phenomena in galaxies

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http://www.astro.ugto.mx/∼eenens/hot/
http://www.star.ucl.ac.uk/∼hsn/index.html
ftp://ftp.sron.nl/pub/karelh/UPLOADS/WRBIB/

Contents of this newsletter

Accepted Papers

Mass and Kinetic Energy of the Homunculus Nebula around eta Carinae

Nathan Smith[1], Robert D. Gehrz[2], Philip M. Hinz[3], William F. Hoffmann[3], Joseph L. Hora[4], Eric E. Mamajek[3] and Michael R. Meyer[3]

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We examine thermal infrared images of η Carinae at wavelengths from 4.8 to 25 μm obtained with the MIRAC3 camera system at the Magellan Observatory, and we conclude that η Car's circumstellar Homunculus Nebula contains much more mass ($\gtrsim$12 $M_\odot$) and kinetic energy ($10^{49.6}$ to 10^{50} ergs) than had previously been recognized. Excess far-infrared emission from a large mass of cold dust had been discovered recently by Morris et al., which they attributed to 110 K dust in a compact equatorial torus. Our images suggest, however, that roughly 10 $M_\odot$ or more resides instead in the rapidly expanding polar lobes of the Homunculus, known to be ejected during η Car's Great Eruption in the 19th century. Combining this large mass with reliable expansion speeds for the polar lobes allows us to estimate the large kinetic energy and efficient momentum transfer associated with the eruption. Most mass resides in a cool outer layer of the lobes, with dust at ∼140 K. This material is only revealed at 18 to 25 μm with high spatial resolution images that can separate adjacent dust components. Warmer dust at ∼200 K that has been recognized for some time (responsible for previous mass estimates of 2 to 3

$M_\odot$) blankets the inner surfaces of the mosly hollow polar lobes as they are irradiated more directly by the central engine.

Accepted by the Astronomical Journal, March 2003
Preprints from nathans@casa.colorado.edu

The Statistical Sobolev Rosseland Mean and the Effects of Frequency Redistribution on Wolf-Rayet Wind Driving

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The optically thick character of Wolf-Rayet winds implies that stellar continuum photons are multiply scattered, both due to free electron opacity and overlapping wind-broadened spectral lines. This allows the wind to accumulate a substantial excess in momentum flux relative to the driving radiation field, as is observationally required. Nevertheless, sustaining such a high degree of multiple scattering requires not only a large optical depth *spatially*, it also requires substantial *spectral* blanketing. The latter is difficult to maintain when redistribution during scattering allows radiative flux to shift preferentially into spectral regions with fewer lines, since then the channels carrying much of the flux are also the least well blanketed. This paper parametrizes the potential severity of this effect in simple terms, using a generalization of the Rosseland mean treated in the Sobolev approximation. We show that our approach provides an informative starting point for characterizing and conceptualizing nongray effects in optically thick supersonic flows.

Accepted by The Astrophysical Journal
Preprints from ajo@astro.physics.uiowa.edu

Far Ultraviolet Spectroscopic Explorer Snap-Shot Survey of O VI Variability in the Winds of 66 OB-Type Stars

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We have used the *Far Ultraviolet Spectroscopic Explorer (FUSE)* to conduct a snap-shot survey of O VI variability in the winds of 66 OB-type stars in the Galaxy and the Magellanic Clouds. These time series consist of two or three observations separated by intervals ranging from a few days to several months. Although these time series provide the bare minimum of information required to detect variations, this survey demonstrates that the O VI doublet in the winds of OB-type stars is variable on various scales both in time and velocity. For spectral types from O3 to B1, 64% vary in time. At spectral types later than B1, no wind variability is observed. This fraction represents a lower limit on the true incidence of variability in the O VI wind lines, which is very common and probably ubiquitous. The observed variations extend over several hundreds of km/s of the wind profile and can be strong. The width over which the wind O VI profile varies is only weakly correlated with the

terminal velocity (v_∞), but a significant correlation (close to a 1:1 relationship) is derived between the maximum velocity of the variation and v_∞. High velocity O VI wind absorption features (possibly related to the discrete absorption components seen in other wind lines) are also observed in 46% of the cases for spectral types from O3 to B0.5. These features are variable, but the nature of their propagation cannot be determined from this survey. If X-rays can produce sufficient O VI by Auger ionization of O IV, and the X-rays originate from strong shocks in the wind, this study suggests that stronger shocks occur more frequently near v_∞, causing an enhancement of O VI near v_∞.

Accepted by ApJ
Preprints from nl@astro.wisc.edu
or on the web at http://arxiv.org/abs/astro-ph/0302011

A Grid of NLTE Line-Blanketed Model Atmospheres of O-type Stars

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We have constructed a comprehensive grid of 680 metal line-blanketed, NLTE, plane-parallel, hydrostatic model atmospheres for the basic parameters appropriate to O-type stars. The OSTAR2002 grid considers 12 values of effective temperatures, $27\,500\,\mathrm{K} \leq T_{\rm eff} \leq 55\,000\,\mathrm{K}$ with 2 500 K steps, 8 surface gravities, $3.0 \leq \log g \leq 4.75$ with 0.25 dex steps, and 10 chemical compositions, from metal-rich relative to the Sun to metal-free. The lower limit of $\log g$ for a given effective temperature is set by an approximate location of the Eddington limit. The selected chemical compositions have been chosen to cover a number of typical environments of massive stars: the galactic center, the Magellanic Clouds, Blue Compact Dwarf galaxies like I Zw 18, and galaxies at high redshifts. The paper contains a description of the OSTAR2002 grid and some illustrative examples and comparisons. The complete OSTAR2002 grid is available at our website at http://tlusty.gsfc.nasa.gov.

To appear in ApJS, 146 (June 2003)
Preprints from astro-ph/0210157

High-Resolution *CHANDRA* Spectroscopy of tau Scorpii: A Narrow-Line X-ray Spectrum From a Hot Star

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Long known to be an unusual early-type star by virtue of its hard and strong X-ray emission, τ Scorpii poses a severe challenge to the standard picture of O-star wind-shock X-ray emission. The *Chandra*

HETGS spectrum now provides significant direct evidence that this B0.2 star does not fit this standard wind-shock framework. The many emission lines detected with the *Chandra* gratings are significantly narrower than what would be expected from a star with the known wind properties of τ Sco, although they are broader than the corresponding lines seen in late-type coronal sources. While line ratios are consistent with the hot plasma on this star being within a few stellar radii of the photosphere, from at least one He-like complex there is evidence that the X-ray emitting plasma is located more than a stellar radius above the photosphere. The *Chandra* spectrum of τ Sco is harder and more variable than those of other hot stars, with the exception of the young magnetized O star θ^1 Ori C. We discuss these new results in the context of wind, coronal, and hybrid wind-magnetic models of hot-star X-ray emission.

Accepted by The Astrophysical Journal

Preprints from dcohen1@swarthmore.edu
or on the web at http://arxiv.org/abs/astro-ph/0211412
and http://astro.swarthmore.edu/∼cohen/Papers/tsco_preprint.pdf

X-ray emission line profile modeling of hot stars

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The launch of high-spectral-resolution x-ray telescopes (*Chandra*, *XMM*) has provided a host of new spectral line diagnostics for the astrophysics community. In this paper we discuss Doppler-broadened emission line profiles from highly supersonic outflows of massive stars. These outflows, or winds, are driven by radiation pressure and carry a tremendous amount of kinetic energy, which can be converted to x rays by shock-heating even a small fraction of the wind plasma. The unshocked, cold wind is a source of continuum opacity to the x rays generated in the shock-heated portion of the wind. Thus the emergent line profiles are affected by transport through a two-component, moving, optically thick medium. While complicated, the interactions among these physical effects can provide quantitative information about the spatial distribution and velocity of the x-ray-emitting and absorbing plasma in stellar winds. We present quantitative models of both a spherically-symmetric wind and a wind with hot plasma confined in an equatorial disk by a dipole magnetic field.

Accepted by The Review of Scientific Instruments

Preprints from roban@sccs.swarthmore.edu
or on the web at http://arxiv.org/abs/astro-ph/0212313
or http://www.sccs.swarthmore.edu/users/03/roban/x-ray/

Hodge 53-47: An early O-type double lined binary in SMC

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We present a spectroscopic and photometric study of the double lined binary Hodge 53-47 in the Small

Magellanic Cloud. We determine for the binary components spectral types of O6 V + O4-5 III(f). Through a simultaneous light and radial velocity curve analysis via the Wilson-Devinney code we find absolute masses of ∼26 $M_\odot$ and ∼16 $M_\odot$ and radii of ∼10.1 $R_\odot$ and ∼8.4 $R_\odot$ for the O6 V and O4-5 III(f) components, respectively. The relatively low mass found for the O4-5 III(f) component suggests that mass transfer and loss have played a significant role in the evolution of these stars.

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Preprints from nidia@fcaglp.unlp.edu.ar

The Conspicuous Absence of X-ray Emission from Carbon-Enriched Wolf-Rayet Stars

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The carbon-rich WC5 star WR 114 was not detected during a 15.9 ksec XMM-Newton observation, implying an upper limit to the X-ray luminosity of $L_x \lesssim 2.5 \times 10^{30}\,\mathrm{erg\,s^{-1}}$ and to the X-ray to bolometric luminosity ratio of $L_x/L_{Bol} \lesssim 4\times10^{-9}$. This confirms indications from earlier less sensitive measurements that there has been no convincing X-ray detection of any single WC star. This lack of detections is reinforced by XMM-Newton and Chandra observations of WC stars. Thus the conclusion has to be drawn that the stars with radiatively-driven stellar winds of this particular class are insignificant X-ray sources. We attribute this to photoelectronic absorption by the stellar wind. The high opacity of the metal-rich and dense winds from WC stars puts the radius of optical depth unity at hundreds or thousands of stellar radii for much of the X-ray band. We believe that the essential absence of hot plasma so far out in the wind exacerbated by the large distances and correspondingly high ISM column densities makes the WC stars too faint to be detectable with current technology. The result also applies to many WC stars in binary systems, of which only about 20% are identified X-ray sources, presumably due to colliding winds.

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Preprints from lida@astro.physik.uni-potsdam.de
or by anonymous ftp to ftp://ftp.astro.physik.uni-potsdam.de/pub/lida

X-ray line emission from a fragmented stellar wind

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We discuss X-ray line formation in dense O star winds. A random distribution of wind shocks is assumed to emit X-rays that are partially absorbed by cooler wind gas. The cool gas resides in highly compressed fragments oriented perpendicular to the radial flow direction. For fully opaque fragments, we find that the blueshifted part of X-ray line profiles remains flat-topped even after severe wind attenuation, whereas the red part shows a steep decline. These box-type, blueshifted profiles resemble recent Chandra observations of the O3 star ζ Pup. For partially transparent fragments, the emission

lines become similar to those from a homogeneous wind.
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Preprints from afeld@astro.physik.uni-potsdam.de
or by anonymous ftp to ftp.astro.physik.uni-potsdam.de/pub/ahf/fragment.ps
or on the web at http://www.astro.physik.uni-potsdam.de/abstracts/fragment-afeld.html

VLT observations of the highly ionized nebula around Brey2

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We present the first high resolution He II λ4686 images of the high excitation nebula around the WR star Brey 2 in the LMC. This nebula presents a striking morphology: a small arc-like feature some 3.6 pc in radius is particularly prominent in the He II λ4686 line. We further discover a previously unknown faint He II emission that extends over an area of 22×17 pc^2. An even fainter He II emission is apparently associated with the interstellar bubble blown by the progenitor of Brey2. The total He II flux corresponds to an ionizing flux of 4×10^{47} photons s^{-1}. Hα, [O III], and He I λ5876 images and long-slit spectra are also examined in this letter, enabling us to investigate the detailed physical properties at various locations of the nebula.

Accepted by A&A Letters
Preprints from naze@astro.ulg.ac.be
or on the web at http://vela.astro.ulg.ac.be/Preprints/P80/index.html or astroph/0302515

Submitted Papers

Spectral Response of the Pulsationally-Induced Shocks in the Atmosphere of BW Vulpeculae

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BW Vul is remarkable for exciting an extremely strong radial pulsation mode. This instability grows in its outer envelope and forms visible shock features in the continuum flux and spectral line profiles at two phases separated by 0.8 cycles. Material propelled upwards energetically in the atmosphere from the shock returns to the lower photosphere where it creates a second shock just before the start of the next cycle. We have obtained three nights of echelle data for this star over about five pulsation cycles (P = 0.201 days) in order to evaluate the effects of atmospheric shocks on a number of important red lines in the spectrum. These lines include He I λ5875 and λ6678, C II $\lambda\lambda$6578-83 doublet, and other moderate (e.g., Si II λ6371) and high excitation (Si III λ5737) lines. We have added to these data 37 archival IUE/SWP echelle spectra obtained in 1994. We have investigated the equivalent widths and

shapes of the optical lines for evidence of *inter alia* lags and have compared our results to the *IUE* fluxes extracted from the far-UV continuum, He II λ1640, and several resonance lines.

A comparison of He I λ5875 and λ6678 line profiles during the peak of the infall activity suggests that differences in the development of the blue wing at this time are due to heating and a short-lived formation of an optically thin layer above the region compressed by the infall. This discovery and the well-known decreases in equivalent widths of the C II doublet at the two shock phases leads us to suggest that shock heating flattens the atmospheric temperature gradient, whether it is the infall shock preferentially heating of the upper atmospheric layers from infall, or the pulsational wave shock, which takes on an isothermal character as it emerges into the more tenuous upper photosphere.

Except for evidence of wind in the far blue wings of the UV resonance lines, we find no evidence for a shock delay arriving at different regions of line formation of the photosphere (i.e., a "Van Hoof effect'). Phase lags attributed by some former observers may be false indicators arising from varying degrees of desaturation of multiple lines, such as for the red He I lines. In addition, an apparent lag in the equivalent width curve of lines arising from less excited atomi c levels could instead be caused by post-shock cooling, followed by a rebound shock, as suggested by subtle variations in the photospheric λ1640 and UV continuum flux curves.

Submitted to MNRAS
Preprints from `msmith@stsci.edu`
or by anonymous ftp to `nobel.stsci.edu/pub/simon/bwvul/bwvul.ps`

Catalog of Galactic OB Stars

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An all-sky catalog of galactic OB stars has been created by extending the Case-Hamburg galactic-plane luminous stars surveys to include 5500 additional objects drawn from the literature. This work brings the total number of known or reasonably-suspected OB stars to over 16,000. Companion databases of UBV photometry and MK classifications for these objects include nearly 30,000 and 20,000 entries, respectively. The catalog and data files are available via anonymous ftp to directory /pub at sirius.mcs.alma.edu.

Submitted to The Astronomical Journal
Preprints from `reed@alma.edu`

The galactic evolution of neutron star mergers and their possible effect on the galactic chemical enrichment of r-process elements

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A population number synthesis code follows in detail the evolution of a population of single stars and of close binaries. We use our code to simulate the population of double compact star systems with special emphasis on double neutron star binaries and binaries with a neutron star and a black hole component. The evolutionary parameters which affect critically the population predictions are

discussed in detail. We then combine the population code with a chemical evolutionary model of galaxies in order to follow the temporal evolution of the double compact star binary population in general, the neutron star merger rate in particular, and we discuss the theoretically expected galactic enrichment of r-process elements due to the latter. We show that the neutron star merger process reproduces the observed r-process enrichment of the Galaxy and we suggest a scenario in which double neutron star binaries that were formed in the galactic disc during the early evolution of the Galaxy, are able to enrich in a selective way the galactic halo in r-process elements.

Submitted to New Astronomy
Preprints from dvbevere@vub.ac.be
or on the web at astro-ph/0302048

In Proceedings

High-resolution XMM-Newton X-ray spectra of τ Scorpii

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The first high-resolution X-ray spectra of the B0.2V star τ Scorpii obtained during 22.5ks on Aug. 20, 2001 with the RGS GRATING and the EPIC-MOS CCD spectrometers on board XMM-Newton exhibit bright emission lines of the H- and He-like ions of C, N, O, Ne, Mg, and Si, as well as Fe XVII and Fe XVIII lines. The emission line and continuum spectra have been simultaneously fitted. We obtain four temperatures: 1.6, 5.2, 8.2, and $\gtrsim$20 MK, emission measures and abundances. The nitrogen lines arerelatively strong: The N/O abundance ratio is $\sim$3$\times$ solar. No indication of a solar-type "FIP effect" was found for the other elements. The temperatures are confirmed by DEM modeling. According to the derived models $L_{\rm x}$ (0.3–10 keV) = $3.2 \times 10^{31}\,{\rm erg\,s^{-1}}$ at a distance of 132 pc. The He-like forbidden and intercombination line ratios of N,O,Ne, and Mg are determined by the strong stellar UV radiation field and yield upper limits to the radial distances at which these lines originate. The soft ($\lesssim$ 8 MK) component probably originates from shocks low in the wind that are produced by the common mechanism of radiation line-driven instabilities, consistent with the observed emission line profiles that are much narrower ($\lesssim$ 500 km/s) than the broad lines (up to 1500 km/s) observed high up in the wind of ζ Puppis. The hot ($\sim$ 20-40 MK) component is explained by a model involving dense clumps embedded in a wind that approaches high relative velocities ($\sim$ 1400 – 1700 km/s) and the interaction produces strong shocks.

Accepted by Advances in Space Research (Poster, COSPAR 2002)
Preprints from r.mewe@sron.nl

Rotation and Mass Ejection: the Launching of Be-Star Disks

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The characteristic signature of Be stars is the Balmer line emission understood to arise in a circumstellar disk. Unlike the *accretion* disks of protostars or mass-exchange binary systems, the evolved and generally single or wide-binary status of Be stars seems to require that its disk must form from mass *ejection* (a.k.a. *de*cretion) from the star itself. In this paper, I use analogies with launching orbital satellites to discuss two candidate processes (radiation, pulsation) for driving such orbital mass ejection, with particular emphasis on the role of the rapid, possibly near-critical, rotation of Be stars in facilitating the formation of their signature disks.

Submitted to Proceedings of IAUS 215 on Stellar Rotation
Preprints from owocki@bartol.udel.edu
or on the web at http://www.bartol.udel.edu/õwocki/preprints/IAUS215_owocki.ps.gz

Massive Close Binaries

Dany Vanbeveren

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In the present review we summarize direct and indirect evidence that the massive close binary frequency is very large. We then discuss the binary evolutionary processes and we present a general massive close binary evolutionary scheme. Finally, we highlight the importance of massive close binaries for population number synthesis and the chemical evolution of galaxies.

To appear in "Massive Stars: Formation, Evolution, Internal Structure and Environnement", eds. M. Heydari-Malayeri and J.-P. Zahn
Preprints from dvbevere@vub.ac.be
or on the web at astro-ph/0303199

Binary evolution models with rotation

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We discuss the first available binary evolution models which include up-to-date rotational physics for both components, as well as angular momentum accretion and spin-orbit coupling. These models allow a self-consistent computation of the mass transfer efficiency during Roche-lobe overflow phases, and a determination of the transition from quasi-conservative to non-conservative evolution. Applications to massive binary systems lead to predictions for the spin rates of compact objects in binaries, and for the occurrence of gamma-ray bursts from collapsars in binaries. Rotational effects in accreting white dwarfs are found to stabilise the shell burning and decrease the carbon abundance in progenitor

models for Chandrasekhar-mass Type Ia supernovae, and to potentially avoid a detonation of the white dwarf within the sub-Chandrasekhar mass scenario.

in:Stellar Rotation, proc. IAU-Symp. 215, (San Francisco: ASP), A. Maeder, P. Eenens, eds., in press
Preprints from `n.langer@astro.uu.nl`
or on the web at `http://www.astro.uu.nl/~langer/siu_web/pre.html`

Jobs

Postdoctoral Research Scientist-Stellar High Energy Astrophysics

The Universities Space Research Association (USRA), in conjunction with the NASA/Goddard Space Flight Center's Laboratory for High Energy Astrophysics (LHEA), is seeking a postdoctoral research scientist to work on-site at GSFC on analysis of X-ray observations of the supermassive star Eta Carinae during and through the star's X-ray eclipse, which is expected to occur in June 2003. These X-ray observations are a key part of a larger observing campaign, which will take place throughout 2003 and into 2004. See `http://lheawww.gsfc.nasa.gov/users/corcoran/eta_car/2003.5/` for more details about the planned observations.

The successful candidate will work with Dr. Michael Corcoran on analysis of data from a set of CHANDRA High Energy Transmission Grating observations of Eta Carinae scheduled for this eclipse period. The candidate will also be involved in the interpretation of these CHANDRA data in context of other observations in X-ray and other wavelengths. The candidate will also be encouraged to pursue her/his own research in related areas.

The position requires a Ph.D. in astronomy, physics, or related disciplines. Previous experience with analysis and interpretation of x-ray spectral data, along with experience in relevant analysis software packages (CIAO, SAS, IDL) is highly desirable. The initial appointment will be for one year, renewable for a second depending on performance and availability of funding.

USRA is a non-profit university consortium, chartered to broaden opportunities for collaboration between university and government space research communities. EOE. To apply mail letter describing research interests, complete CV and publication list, and contacts (include e-mail addresses) for at least three references to:

Universities Space Research Association
Attn: David V. Holdridge
Code: S-HEA
7501 Forbes Blvd., Suite 206
Seabrook, MD 20706-2253

Meetings

Structure in Hot Star Winds

Workshop at University College London (UCL)
3 – 4 April 2003

A 2-day workshop is planned at UCL which will be focused on discussing key recent developments in our understanding of small- and large-scale structure in luminous early-type stars. The sessions will include observations and theory of wind structure, new perspectives from Chandra and XMM, consequences for line-synthesis modelling, and colliding winds. The full list of invited contributions is available at: http://www.star.ucl.ac.uk/workshop/index.html

Anyone interested in attending the workshop should contact Raman Prinja (rkp@star.ucl.ac.uk)

Science with Adaptive Optics

ESO Workshop
September 16 – 19, 2003
Garching (near Munich), Germany

Over the past ten years, the concept of adaptive optics has matured from early experimental stages to a standard observing tool now available at many large optical and near-infrared telescope facilities. Indeed, adaptive optics has become an integral part of all present and future large telescope initiatives, and will be essential in exploiting the full potential of the large optical interferometers currently under construction. Adaptive optics has been identified as one of the key technologies for astronomy in the 21st century. Adaptive optics has already delivered exciting results covering areas from solar system astronomy (both the sun and the planetary system) over the star forming regions in the solar neighbourhood to Local Group galaxies and objects at cosmological distances. Recent highlights include:

- Evolution of small scale structures on the solar surface
- Discovery of binary asteroids and asteroids moons
- High-resolution studies of circumstellar disks around young stars
- Precise mass determination of the black hole in the Galactic Center
- Spatially resolved studies of extragalactic stellar populations

The present meeting intends to bring together users of adaptive optics from all fields of astronomy to discuss the latest scientific results obtained with diverse adaptive optics systems and to exchange ideas on how to reduce and analyse such observations.This ESO workshop aims also at educating the general astronomical community in Europe on the unique science potential of adaptive optics for all branches of astronomy. We want to bring together researchers working in many different areas of astronomy in order to provide a comprehensive picture of the utilisation of adaptive optics in astronomy. Synergy effects are expected from the comparison of different observing and data analysis strategies.

Scientific Organizing Committee:
Co-chairs: Wolfgang Brandner (MPIA), Markus Kasper (ESO)
Danielle Alloin (ESO), Laird Close (Steward Obs., Tucson, USA), Tim Davidge (Herzberg Inst., Victoria, Canada), Reinhard Genzel (MPE, Germany), Thomas Henning (MPIA, Germany), Christoph Keller (NSO Tucson, USA), Anne-Marie Lagrange (LAOG, France), Simon Morris (Durham, UK), Francois Rigaut (Gemini, USA), Daniel Rouan (Obs. de Paris, France), Hans Zinnecker (AIP, Germany)

For more details and registration, see **http://www.eso.org/aoscience03**

Symposium Secretary: Christina Stoffer

European Southern Observatory
Karl-Schwarzschild-Str. 2
D-85748 Garching bei München, Germany
FAX: +49 89 3200 6480
email: aoscience03@eso.org

Massive Star Birth: A Crossroads of Astrophysics

Proposal for an IAU Symposium to be held in fall 2004

Scientific Organizing Committee

Edward B. Churchwell (USA) - Co-Chair, Peter S. Conti (USA) - Co-Chair, Ewine van Dishoeck (Netherlands), Guido Garay (Chile), Suzana Lizano (Mexico), Rolf Kudritzki (USA), Gianni Tofani (Italy), Malcolm Walmsley (Italy), Hans Zinnecker (Germany)

Justification

We propose an IAU Symposium to consider the birth processes of massive stars, bringing together experts from several disparate astronomical communities: stellar astrophysics, interstellar medium, radio astronomy, and stellar dynamics. A common field of study will provide a unique opportunity for discussions among astrophysicists not normally in direct scientific contact with one another. Unlike other fields of stellar astrophysics, massive star birth is nearly entirely hidden from view in the visible but amenable to observation at IR, mm, and cm wavelengths. These observations typically deal with the surrounding ionized medium and the natal dust clouds from which the properties of the underlying newly born stars need to be inferred. Eventually, of course, the dust is dissipated and the star can then be observed directly in the near IR. This conference will be aimed specifically at understanding massive star birth processes in terms of the evolution of the newly born underlying star and that of its environment.

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