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Accepted Papers

Spectroscopy of SMC Wolf-Rayet Stars Suggests that Wind-Clumping does not Depend on Ambient Metallicity

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The mass-loss rates of hot, massive, luminous stars are considered a decisive parameter in shaping the evolutionary tracks of such stars and influencing the interstellar medium on galactic scales. The small-scale structures (clumps) omnipresent in such winds may reduce empirical estimates of mass-loss rates by an evolutionarily significant factor of ≥ 3. So far, there has been no it direct observational evidence that wind-clumping may persist at the same level in environments with a low ambient metallicity,

where the wind-driving opacity is reduced. Here we report the results of time-resolved spectroscopy of three presumably single Population I Wolf-Rayet stars in the Small Magellanic Cloud, where the ambient metallicity is $\sim 1/5 Z_{\odot}$. We detect numerous small-scale emission peaks moving outwards in the accelerating parts of the stellar winds. The general properties of the moving features, such as their velocity dispersions, emissivities and average accelerations, closely match the corresponding characteristics of small-scale inhomogeneities in the winds of Galactic Wolf-Rayet stars.

Reference: ApJL
On the web at: `http://gemini.tccw.wku.edu:8080/~sergey/ms.pdf`
Preprints from: `sergey@astro.wku.edu`

Hot star wind models with new solar abundances

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We compare the hot-star wind models calculated by assuming older solar-abundance determination with models calculated using the recently published values derived from 3D hydrodynamical model atmospheres. We show that the use of new abundances with lower metallicity improves the agreement between wind observation and theory in several aspects. (1) The predicted wind mass-loss rates are lower by a factor of 0.76. This leads to better agreement with mass-loss rates derived from observational analysis that takes the clumping into account. (2) As a result of the lowering of mass-loss rates, there is better agreement between the predicted modified wind momentum-luminosity relationship and that derived from observational analysis that takes the clumping into account. (3) Both the lower mass fraction of heavier elements and lower mass-loss rates lead to a decrease in opacity in the X-ray region. This influences the prediction of the X-ray line profile shapes. (4) There is better agreement between predicted PV ionization fractions and those derived from observations.

Reference: A&A Letters
On the web at: `http://xxx.lanl.gov/abs/astro-ph/0701411`
Preprints from: `krticka@physics.muni.cz`

Constraining the fundamental parameters of the O-type binary

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Using a set of high-resolution spectra, we studied the physical and orbital properties of the O-type binary CPD-41 7733, located in the core of ngc. We report the unambiguous detection of the secondary spectral signature and we derive the first SB2 orbital solution of the system. The period is 5.6815 +/- 0.0015 d and the orbit has no significant eccentricity. CPD-41 7733 probably consists of stars of spectral types O8.5 and B3. As for other objects in the cluster, we observe discrepant luminosity classifications while using spectroscopic or brightness criteria. Still, the present analysis suggests that both components display physical parameters close to those of typical O8.5 and B3 dwarfs. We also

analyze the X-ray light curves and spectra obtained during six 30 ks XMM-Newton pointings spread over the 5.7 d period. We find no significant variability between the different pointings, nor within the individual observations. The CPD-41 7733 X-ray spectrum is well reproduced by a three-temperature thermal mekal model with temperatures of 0.3, 0.8 and 2.4 keV. No X-ray overluminosity, resulting e.g. from a possible wind interaction, is observed. The emission of CPD-41 7733 is thus very representative of typical O-type star X-ray emission.

Reference: Accepted by ApJ
On the web at: `http://arxiv.org/abs/astro-ph/0701574`
Preprints from: `hsana@eso.org`

Near-IR imaging of Galactic massive clusters: Westerlund 2

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Context
Most stars in the Galaxy were formed in massive clusters. To understand nature's favorite mode of star formation and the initial stages of the life of most stars one needs to characterize the youngest and resolved massive clusters in the Milky Way. Unfortunately young massive clusters are challenging observational targets as they are rare, hence found at large distances, are still embedded in their parental molecular cloud, and are swamped by relatively bright nebulae.

Aims
In this paper we propose to use deep subarcsec resolution NIR data to derive the basic parameters of the unstudied population of massive cluster Westerlund 2.

Methods
We present deep JHK_s images ($\sim$ 0.6" seeing) and photometry of Westerlund 2. This is the most complete photometric census of the cluster's population to date.

Results
We detect a total of 4701, 5724, and 5397 sources in the J, H, and K_s bands respectively. By comparison with main-sequence and pre-main-sequence model tracks, we determine an average visual extinction toward the cluster of 5.8 mag, a likely distance of 2.8 kpc, and an age of 2.0 ± 0.3 Myr for the core of the cluster. Although we have the sensitivity to reach beyond the hydrogen burning limit in the cluster, we are only complete to about 1 $M_\odot$ due to source confusion. We find no evidence for a top-heavy MF, and the slope of the derived mass function is -1.20 ± 0.16. Based on the extrapolation of a field IMF, we roughly estimate the total mass of the cluster to be about 10^4 $M_\odot$. We find compelling evidence for mass segregation in this cluster.

Reference: A&A, in press
On the web at: `http://www.astro.up.pt/investigacao/ficheiros/175.pdf`
Preprints from: `joanasba@astro.up.pt`

HV 11423: The Coolest Supergiant in the SMC

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We call attention to the fact that one of the brightest red supergiants in the SMC has recently changed its spectral type from K0-1 I(December 2004) to M4 I (December 2005) and back to K0-1 I (September 2006). An archival spectrum from the Very Large Telescope reveals that the star was even cooler (M4.5-M5 I) in December 2001. By contrast, the star was observed to be an M0 I in both October 1978 and October 1979. The M4-5 I spectral types is by far the latest type seen for an SMC supergiant, and its temperature in that state places it well beyond the Hayashi limit into a region of the H-R diagram where the star should not be in hydrostatic equilibrium. The star is variable by nearly 2 mag in V, but essentially constant in K. Our modeling of its spectral energy distribution shows that the visual extinction has varied during this time, but that the star has remained essentially constant in bolometric luminosity. We suggest that the star is currently undergoing a period of intense instability, with its effective temperature changing from 4300 K to 3300 K on the time-scale of months. It has one of the highest 12μm fluxes of any RSG in the SMC, and we suggest that the variability at V is due primarily to changes in effective temperature, and secondly, due to changes in the local extinction due to creation and dissipation of circumstellar dust. We speculate that the star may be nearing the end of its life.

Reference: ApJ, in press

On the web at: `http://www.lowell.edu/users/massey/hv11423.pdf.gz`

Preprints from: `Phil.Massey@lowell.edu`

On the co-existence of chemically peculiar Bp stars, slowly pulsating B stars and constant B stars in the same part of the H-R diagram

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Aims. In order to better model massive B-type stars, we need to understand the physical processes taking place in slowly pulsating B (SPB) stars, chemically peculiar Bp stars, and non-pulsating normal B stars co-existing in the same part of the H-R diagram. Methods. We carry out a comparative study between samples of confirmed and well-studied SPB stars and a sample of well-studied Bp stars with known periods and magnetic field strengths. We determine their evolutionary state using accurate HIPPARCOS parallaxes and Geneva photometry. We discuss the occurrence and strengths of magnetic fields as well as the occurrence of stellar pulsation among both groups. Further, we make a comparison of Geneva photometric variability for both kinds of stars. Results. The group of Bp stars is significantly younger than the group of SPB stars. Longitudinal magnetic fields in SPB stars are weaker than those of Bp stars, suggesting that the magnetic field strength is an important factor for

B type stars to become chemically peculiar. The strongest magnetic fields appear in young Bp stars, indicating a magnetic field decay in stars at advanced ages. Rotation periods of Bp and pulsation periods of SPB stars are of the same order and the behaviour of Geneva photometric variability of some Bp stars cannot be distinguished from the variability of SPB stars, illustrating the difficulty to interpret the observed variability of the order of days for B-type stars. We consider the possibility that pulsation could be responsible for the variability among chemically peculiar stars. In particular, we show that a non-linear pulsation model is not excluded by photometry for the Bp star HD175362.

Reference: Accepted for publication in Astronomy & Astrophysics on 29/01/2007
On the web at: `http://arxiv.org/abs/astro-ph/0702111`
Preprints from: `maryline@ster.kuleuven.be`

Discovery of magnetic fields in three He variable Bp stars with He and Si spots

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It is essential for the understanding of stellar structure models of high mass stars to explain why constant stars, non-pulsating chemically peculiar hot Bp stars and pulsating stars co-exist in the slowly pulsating B stars and beta Cephei instability strips. We have conducted a search for magnetic fields in the four Bp stars HD 55522, HD 105382, HD 131120, and HD 138769 which previously have been wrongly identified as slowly pulsating B stars. A recent study of these stars using the Doppler Imaging technique revealed that the elements He and Si are inhomogeneously distributed on the stellar surface, causing the periodic variability. Using FORS1 in spectropolarimetric mode at the VLT, we have acquired circular polarisation spectra to test the presence of a magnetic field in these stars. A variable magnetic field is clearly detected in HD 55522 and HD 105382, but no evidence for the existence of a magnetic field was found in HD 131120. The presence of a magnetic field in HD 138769 is suggested by one measurement at 3 sigma level. We discuss the occurence of magnetic B stars among the confirmed pulsating B stars and find strong magnetic fields of order kG and oscillations to be mutually exclusive.

Reference: Astronomische Nachrichten, Vol.328, Issue 1, p.41-45
On the web at: `http://arxiv.org/pdf/astro-ph/0610537`
Preprints from: `maryline@ster.kuleuven.be`

A Survey of Local Group Galaxies Currently Forming Stars: II. UBVRI Photometry of Stars in Seven Dwarfs

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We have obtained UBVRI images with the Kitt Peak and Cerro Tololo 4-m telescopes and Mosaic cameras of seven dwarfs in (or near) the Local Group, all of which have known evidence of recent star formation: IC10, NGC 6822, WLM, Sextans B, Sextans A, Pegasus, and Phoenix. We construct color-magnitude diagrams (CMDs) of these systems, as well as neighboring regions that can be used to evaluate the degree of foreground contamination by stars in the Milky Way. Inter-comparison of these CMDs with those of M31, M33, the LMC, and the SMC permits us to determine improved reddening values for a typical OB star found within these galaxies. All of the CMDs reveal a strong or modest number of blue supergiants. All but Pegasus and Phoenix also show the clear presence of red supergiants in the CMD, although IC10 appears to be deficient in these objects given its large WR population. The bright stars of intermediate color in the CMD are badly contaminated by foreground stars (30-100%), and considerable spectroscopy is needed before statistics on the yellow supergiants in these systems will be known.This study is intended to serve both as the impetus and "finding charts" for further space-based imaging,and for many spectroscopic programs at large aperture.

Reference: Astronomical Journal, in press
On the web at: `http://www.lowell.edu/users/massey/dwarfs.pdf.gz`
Preprints from: `Phil.Massey@lowell.edu`

X-ray Spectral Variation of Eta Carinae through the 2003 X-ray Minimum

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We report the results of an X-ray observing campaign on the massive, evolved star Eta Carinae, concentrating on the 2003 X-ray minimum as seen by the XMM-Newton observatory. These are the first spatially-resolved X-ray monitoring observations of the stellar X-ray spectrum during the minimum. The hard X-ray emission, believed to be associated with the collision of Eta Carinae's wind with the wind from a massive companion star, varied strongly in flux on timescales of days, but not significantly on timescales of hours. The lowest X-ray flux in the 2–10 keV band seen by XMM-Newton was only 0.7% of the maximum seen by RXTE just before the X-ray minimum. In the latter half of the minimum, the flux increased by a factor of 5 from the lowest observed value, indicating that the X-ray minimum has two states. The slope of the X-ray continuum above 5 keV did not vary in any observation, which suggests that the electron temperature of the hottest plasma associated with the stellar source did not vary significantly at any phase. Through the minimum, the absorption to the

stellar source increased by a factor of 5–10 to NH ∼3-4E23 cm^{-2}. The thermal Fe XXV emission line showed significant excesses on both the red and blue sides of the line outside the minimum and exhibited an extreme red excess during the minimum. The Fe fluorescence line at 6.4 keV increased in equivalent width from 100 eV outside the minimum to 200 eV during the minimum. The small equivalent widths of the Fe fluorescence line suggests small fluorescence yield in the companion's low-density wind. The lack of variation in the plasma temperature is consistent with the eclipse of the X-ray plasma during the minimum, perhaps by a clumpy wind from the primary star, although the deformation of the Fe XXV profile and the relatively weak fluorescence Fe line intensity during the minimum may suggest an intrinsic fading of the X-ray emissivity. The drop in the colliding wind X-ray emission revealed the presence of an additional X-ray component which exhibited no variation on timescales of weeks to years. This new component has relatively cool temperature (kT ∼1 keV), moderate NH (∼5E22 cm^{-2}), large intrinsic luminosity (Lx ∼1E34 erg s^{-1}) and a size $\lesssim$ 1" (2300 AU at 2.3 kpc). This component may be produced by the collision of high speed outflows at v ∼1000-2000 km s^{-1} from Eta Carinae with ambient gas within a few thousand AU from the star.

Reference: ApJ in press
On the web at: `http://arxiv.org/abs/astro-ph/0702409`
Preprints from: `kenji@milkyway.gsfc.nasa.gov`

First detection of phase-dependent colliding wind X-ray emission outside the Milky Way

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After having reported the detection of X-rays emitted by the peculiar system HD5980, we assess here the origin of this high-energy emission from additional X-ray observations obtained with XMM-Newton. This research provides the first detection of apparently periodic X-ray emission from hot gas produced by the collision of winds in an evolved massive binary outside the Milky Way. It also provides the first X-ray monitoring of a Luminous Blue Variable only years after its eruption and shows that the dominant source of the X-rays is not associated with the ejecta.

Reference: accepted by ApJ (letters)
Comments: a small movie showing the evolution of the X-ray luminosity from the system is also available.
On the web at: `http://arxiv.org/abs/astro-ph/0702403`
Preprints from: `naze@astro.ulg.ac.be`

Spectral atlas of massive stars around He I 10830 A

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We present a digital atlas of peculiar, high-luminosity massive stars in the near-infrared region (10470-11000 A) at medium resolution (R 7000). The spectra are centered around He I 10830 A, which is formed in the wind of those stars, and is a crucial line to obtain their physical parameters. The

instrumental configuration also sampled a rich variety of emission lines of Fe II, Mg II, C I, N I and Pa gamma. Secure identifications for most spectral lines are given, based on synthetic atmosphere models calculated by our group. We also propose that two unidentified absorption features have interstellar and/or circumstellar origin. For the strongest one (10780 A) an empirical calibration between E(B-V) and equivalent width is provided. The atlas displays the spectra of massive stars organized in four categories, namely Be stars, OBA Iape (or luminous blue variables, LBV candidates and ex/dormant LBVs), OB supergiants and Wolf-Rayet stars. For comparison, the photospheric spectra of non emission-line stars are presented. Selected LBVs were observed in different epochs from 2001 to 2004, and their spectral variability reveals that some stars, such as Eta Car, AG Car and HR Car, suffered dramatic spectroscopic changes during this time interval.

Reference: Astronomy & Astrophysics, in press
On the web at: `http://arxiv.org/abs/astro-ph/0702169`
Preprints from: `groh@astro.iag.usp.br`

Direct constraint on the distance of y2 Velorum from AMBER/VLTI observations

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In this work, we present the first AMBER observations, of the Wolf-Rayet and O (WR+O) star binary system y2 Velorum. The AMBER instrument was used with the telescopes UT2, UT3, and UT4 on baselines ranging from 46m to 85m. It delivered spectrally dispersed visibilities, as well as differential and closure phases, with a resolution R = 1500 in the spectral band 1.95-2.17 micron. We interpret these data in the context of a binary system with unresolved components, neglecting in a first approximation the wind-wind collision zone flux contribution. We show that the AMBER observables result primarily from the contribution of the individual components of the WR+O binary system. We discuss several interpretations of the residuals, and speculate on the detection of an additional continuum component, originating from the free-free emission associated with the wind-wind collision zone (WWCZ), and contributing at most to the observed K-band flux at the 5% level. The expected absolute separation and position angle at the time of observations were 5.1+-0.9mas and 66+-15 respectively. However, we infer a separation of 3.62+0.11-0.30 mas and a position angle of 73+9-11 degrees. Our analysis thus implies that the binary system lies at a distance of 368+38-13 pc, in agreement with recent spectrophotometric estimates, but significantly larger than the Hipparcos value of 258+41-31 pc.

Reference: A&A
On the web at: `http://fr.arxiv.org/abs/astro-ph/0610936`
Preprints from: `fmillour@mpifr-bonn.mpg.de`

Physical Orbit for Lambda Virginis and a Test of Stellar Evolution Models

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Lambda Virginis (LamVir) is a well-known double-lined spectroscopic Am binary with the interesting property that both stars are very similar in abundance but one is sharp-lined and the other is broad-lined. We present combined interferometric and spectroscopic studies of LamVir. The small scale of the LamVir orbit (20 mas) is well resolved by the Infrared Optical Telescope Array (IOTA), allowing us to determine its elements as well as the physical properties of the components to high accuracy. The masses of the two stars are determined to be 1.897 Msun and 1.721 Msun, with 0.7% and 1.5% errors respectively, and the two stars are found to have the same temperature of 8280 +/- 200 K. The accurately determined properties of LamVir allow comparisons between observations and current stellar evolution models, and reasonable matches are found. The best-fit stellar model gives LamVir a subsolar metallicity of Z=0.0097, and an age of 935 Myr. The orbital and physical parameters of LamVir also allow us to study its tidal evolution time scales and status. Although currently atomic diffusion is considered to be the most plausible cause of the Am phenomenon, the issue is still being actively debated in the literature. With the present study of the properties and evolutionary status of LamVir, this system is an ideal candidate for further detailed abundance analyses that might shed more light on the source of the chemical anomalies in these A stars.

Reference: ApJ, 658 (in press, 2007 March 20)
On the web at: `http://arxiv.org/abs/astro-ph/0612135`
Preprints from: `mingzhao@umich.edu`

Eclipsing Binary System WN3(h)+O5V BAT99-129: Analysis of the MACHO Light Curve and the Parameters of the Components

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BAT99-129 is a massive eclipsing binary system in the Large Magellanic Cloud (LMC) which consists of WN3(h) and O5V components. A broad-band MACHO light curve of the system is studied in the present paper. A dense and extended atmosphere of the Wolf-Rayet (WR) star does not allow one to analyze the light curve in terms of standard parametric models of Wilson-Devinney type. Distributions of brightness and absorption across the WR star disk are restored using direct solution of integral equations describing eclipses in the system. As a result, reliable estimates of the orbital inclination and component parameters have been obtained. The orbital inclination is 78 deg, the orbital separation is 28.5 solar radii, the radius of the O component is 7.1 solar radii. The size of the WR component core opaque in optical continuum is 3.4 solar radii. The brightness temperature in the center of the WR disk is about 45000K. Probable errors of the parameters are discussed. Evolutionary status of the system is discussed.

Reference: Astronomy Reports

On the web at: http://arxiv.org/abs/astro-ph/0702658
Preprints from: igor@sai.msu.ru

Proceedings

Optically Observable Zero-Age Main-Sequence O Stars

Nolan R. Walborn

Space Telescope Science Institute

A list of fifty optically observable O stars that are likely on or very near the ZAMS is presented. They have been selected on the basis of five distinct criteria, although some of them exhibit more than one. Three of the criteria are spectroscopic (He II 4686 absorption stronger than in normal luminosity class V spectra, abnormally broad or strong Balmer lines, weak UV wind profiles for their spectral types), one is environmental (association with dense, dusty nebular knots), and one is photometric (derived absolute magnitudes fainter than class V). Very few of these stars have been physically analyzed, and they have not been considered in the current framework of early massive stellar evolution. In particular, they may indicate that the earliest, embedded phases are not as large a fraction of the main-sequence lifetimes as is currently believed. Detailed analyses of these objects will likely prove essential to a complete understanding of the early evolution of massive stars.

Reference: STScI 2006 May Symposium, Massive Stars: Pop III and GRBs to the Milky Way, ed. M. Livio & E. Villaver, (Cambridge University Press)
On the web at: http://arxiv.org/abs/astro-ph/0701573
Preprints from: walborn@stsci.edu

The stellar upper mass limit in the solar neighborhood

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IAA, STScI, LCO, UNLP, UAM

We are using HST GO programs 10205, 10602, and 10898 to test the stellar upper mass limit in the solar vicinity by attempting to detect optical close companions, thus lowering the calculated evolutionary masses. We have observed with ACS/HRC all the known (as of early 2005) Galactic O2/3/3.5 stars. We also have observations with HST/FGS and ground-based spectroscopy from LCO and CASLEO. Here we discuss our results for Pismis 24 and HD 93129A.

Reference: To appear in Massive Stars: Fundamental Parameters and Circumstellar Interactions
On the web at: http://xxx.arxiv.org/abs/astro-ph/0702514
Preprints from: jmaiz@iaa.es

Towards using optical/NIR photometry to measure the temperature of O stars

J. Maíz Apellániz & A. Sota

IAA, STScI, UAM

It has been traditionally stated that it is not possible to use optical/NIR photometry to measure the temperatures of O stars. In this contribution we describe the steps required to overcome the hurdles that have prevented this from happening in the past and we present our preliminary results for the low-extinction case.

Reference: To appear in Massive Stars: Fundamental Parameters and Circumstellar Interactions
On the web at: `http://xxx.arxiv.org/abs/astro-ph/0702516`
Preprints from: `jmaiz@iaa.es`

Jobs

Professor position in astrophysics University of Valparaiso, Chile

Michel Cure
Departamento de Fisica y Astronomia, Facultad de Ciencias, Universidad de Valparaiso, Chile

The Department of Physics and Astronomy of the Universidad de Valparaiso, Chile, invites applications for a professor position in observational astronomy with a strong commitment to scientific research in the area of massive stars. The academic category (assistant, associate or full professor) will depend on qualifications and experience of the candidate. Teaching duties concern physics and astronomy courses at both, undergraduate and postgraduate, levels. The position will be initially for a period of two years, with a possibility to be extended to a permanent position afterwards. A command of the Spanish language will be a great advantage and will be expected after a reasonable initial period of about one year. Starting date is as soon as possible.

The successful candidate will have full access to the 10% of Chilean observing time at the international telescopes operating in Chile, as ESO (VLT and La Silla), APEX, Gemini South, SOAR, Magellan, and to the other telescopes at Cerro Tololo and Las Campanas observatories.

Valparaiso is, together with the neighboring town Via del Mar, the most important urban center of Chile, outside the capital Santiago. It also hosts one of the largest concentrations of Universities in Chile. The Universidad de Valparaiso has recently created a rapidly growing research group in astrophysics which currently numbers seven professors. For more details on the Valparaiso Astronomy Group see www.dfa.uv.cl.

Applicants should send, before 15 April 2007, by e-mail, their CV, publication list, statement of research interests and teaching philosophy, and arrange for two letters of recommendation. Before submitting the application, the candidate must request the bases de concurso per e-mail to Santiago.urbina@uv.cl

Weblink: www.dfa.uv.cl

Email contact: michel.cure@uv.cl

Closing date: April 15, 2007

Postdoctoral research position on Starbursts from the local Universe to high redshift
Geneva Observatory

Prof. Dr. Daniel Schaerer
Geneva Observatory 51, Ch. des Maillettes CH-1290 Sauverny Switzerland

The Geneva Observatory in Geneva, Switzerland, announces the availability of a research position at the postdoctoral level open to applicants of all nationalities.

The succesful candidate will work on projects aimed at studying starburst galaxies nearby, at intermediate redshift (z$\sim$2-3), or in the early Universe (z$>$7), involving multi-wavelength observations and/or theoretical modeling. He/she may in particular work with ground-based near-IR and longer wavelength observations including Spitzer and data from upcoming projects with Herschel and sub-mm instruments. He/she will also have access to state-of-the-art modeling tools including 3D radiation transfer, evolutionary synthesis, and photoionisation codes. The candidate will mostly work in collaboration with Prof. Daniel Schaerer in Geneva and within international collaborations.

The Geneva Observatory and the associated Laboratory of Astrophysics of the Swiss Federal Institute of Technology in Lausanne carry out observational, interpretative and theoretical research in the fields of extra-solar planets, stellar evolution, stellar physics, high energy astrophysics, galaxy evolution and dynamics, and observational cosmology.

The appointment will be for one to two years starting around October 1, 2007 (negotiable). It is renewable.

Qualified candidates are encouraged to send their application including a CV and publication list, description of research experience and interests, and contact information of three references preferably via email to the above address. All applications received by 1 May, 2007 will receive full consideration. Informal enquiries with Daniel Schaerer (daniel.schaerer@obs.unige.ch) are welcome.

Weblink: http://obswww.unige.ch/sfr

Email contact: daniel.schaerer@obs.unige.ch

Closing date: 30 apr 2007

Postdoctoral Fellowship in Astrophysics
Keele University

Dr Falk Herwig (fherwig@astro.keele.ac.uk)
Astrophysics Group School of Physical and Geographical Sciences, Lennard-Jones Laboratories, Keele

University, Staffordshire ST5 5BG, United Kingdom
Tel: +44 (0)1782 584371 Fax: +44 (0)1782 712378

Applications are invited for a post-doctoral fellowship position in the Astrophysics Group at Keele University. We are looking for a researcher with expertise and interests at the intersection of stellar nucleosynthesis, evolution and hydrodynamics. The appointee will work with Dr. Falk Herwig on large-scale and comprehensive nucleosynthesis computations based on both stellar evolution and hydrodynamics simulations. External team members include Prof. Michael Wiescher (Notre Dame) from the Joint Institue for Nuclear Astrophysics (JINA) and Drs. Frank Timmes and Chris Fryer (LANL). In order to fully realize the collaborative aspects of this project it is expected that the appointee takes advantage of the opportunity to spend one quarter of each year at these participating host institutions.

The Keele astrophysics group is currently undergoing a phase of expansion with three new faculty or tenure-track hired this year, leading up to a group consisting of ten academic staff. The group has research interests in star formation and evolution, the interstellar medium, binary stars, extra-solar planets, and active galaxies. The work covers the entire wave-length range, as well as theory and simulation. The group is supported by a PPARC rolling grant. For more on the Keele group see www.astro.keele.ac.uk. Keele University enjoys a rural setting in proximity to the metropolitan area of Manchester as well as to places of outstanding natural beauty, for example in Wales.

The post, which is jointly funded 75% by a European Union grant to Keele and 25% by JINA, is available for 2 years in the first instance, with the possibility for a third year depending on project progress and continued availability of funding. Please note that this is a full-time post, however, due to funding constraints the contract issued by Keele University, and the salary paid by the University, will be 75% of a full-time contract. The further 25% salary will be paid during the three months per year that the post holder spends in the United States. Adequate research resources, including travel, are provided. We have acquired dedicated high-performance computing resources for this project including an 8-core shared memory compute server as well as data analysis and visualization hardware. The project will also have access to the local 172 CPU ClusterVision machine and to external computing resources. The position is open immediately.

Attention/Comments: Application procedure: Full job packs are available from Human Resources Department, Keele University, Keele, Staffordshire, ST5 5BG, fax: 44-1782-583471, email vacancies@keele.ac.uk or www.keele.ac.uk/depts/uso/hr/cwisvacs.htm. Informal (and confidential) inquiries about the post can be made by contacting Dr Falk Herwig (fherwig@astro.keele.ac.uk, +44-1782-584371) or Prof Nye Evans (ae@astro.keele.ac.uk, tel: 44-1782-583342). Full electronic applications have to be submitted to vacancies@keele.ac.uk by March 5th, 2007. Applicants should arrange to have three letters of reference send to this address by that date as well.
Please quote post reference: RE07/05

Weblink: `www.astro.keele.ac.uk`

Email contact: `fherwig@astro.keele.ac.uk`

Closing date: March 5th, 2007