Active Galaxies Newsletter	*An electronic publication dedicated to the observation and theory of active galaxies*
No. 90 — September 2004	Editor: Rob Beswick (rb@ast.man.ac.uk)

Abstracts - Thesis Abstracts - Jobs - Meetings

From the Editor

The Active Galaxies Newsletter is produced monthly. The deadline for contributions is the last friday of the month. The Latex macros for submitting abstracts and dissertation abstracts are appended to each issue of the newsletter and are also available on the web page.
Rob Beswick

Abstracts of recently accepted papers

Redshift Dependence of QSO Spectral Variability

F. Vagnetti[1] and D. Trevese[2]

[1] Università di Roma Tor Vergata, Dipartimento di Fisica, via della Ricerca Scientifica 1, I-00133 Roma, Italy
[2] Università di Roma La Sapienza, Dipartimento di Fisica, p.le Aldo Moro 2, I-00185 Roma, Italy

We present a combined analysis of the optical spectral variability for two samples of QSOs, 42 objects at z<0.4 monitored at the Wise Observatory (Giveon et al 1999), plus 59 objects up to $z\sim$ 3 in the field of the Magellanic Clouds, detected and/or monitored within the MACHO Project database (Geha et al 2003). Our analysis shows some increase of the observed spectral variability as a function of redshift, with a large scatter. These data are compared with a model based on the addition of flares of different temperatures to a stationary quasar SED, taking into account also the intrinsic scatter of the SEDs.

To appear in "AGN Variability from X-rays to Radio Waves", Eds. C. M. Gaskell, I. M. McHardy, B. M. Peterson, and S. G. Sergeev

E-mail contact: fausto.vagnetti@roma2.infn.it,
preprint available at http://arXiv.org/abs/astro-ph/0408074

A Project for a New Echo-Mapping Campaign at Intermediate Redshift

Dario Trevese[1], Giovanna Stirpe[2], Fausto Vagnetti[3], Valentina Zitelli[2] & Diego Paris[1]

[1] Università di Roma La Sapienza, Dipartimento di Fisica, p.le Aldo Moro 2, I-00185 Roma, Italy
[2] INAF - Osservatorio Astronomico di Bologna, Italy
[3] Università di Roma Tor Vergata, Dipartimento di Fisica, via della Ricerca Scientifica 1, I-00133 Roma, Italy

AGN masses can be estimated by "single epoch" spectral measurements through a mass-luminosity- linewidth relation calibrated by echo mapping measurements of a reference sample of low redshift ($z < 0.3$) and low luminosity ($M_B > -26$) AGNs. To analyze the possible dependence of this relation on luminosity we selected a sample of bright, intermediate redhift ($z \sim 1$) objects and we started a spectrophotometric monitoring campaign with a typical sampling time of about one month. Variability observations of lines with shorter wavelength than H_β will also provide new information on the structure of the broad line region. Cross-correlation analysis of continuum and line variations will require years of monitoring. We present a preliminary analysis of the

data collected during the first year of observations and we discuss the adequacy of the spectrophotometric accuracy attained and future prospects of this project.

To appear in "AGN Variability from X-rays to Radio Waves", Eds. C. M. Gaskell, I. M. McHardy, B. M. Peterson, and S. G. Sergeev

E-mail contact: dario.trevese@roma1.infn.it,
preprint available at http://arXiv.org/abs/astro-ph/0408075

Molecular gas at high redshift: jet-induced star formation?

Klamer, I. J.[1,2], Ekers, R. D[2], Sadler, E. M.[1] and Hunstead, R. W.[1]

[1] School of Physics, Building A28, The University of Sydney, NSW 2006 Australia
[2] Australia Telescope National Facility, CSRIRO, Locked Bag 194, Narrabri, NSW 2390, Australia

We present an alternative interpretation of the observations of BR 1202−0725 at $z = 4.69$ and show that its properties are consistent with a relativistic jet, issuing from the quasar core, propagating into the inter-galactic medium and triggering star f ormation along its path. Prompted by this finding, we reviewed all the $z > 3$ objects detected in molecular line emission and found that the distribution of gas and dust in these sources is often spatially or kinematically offset from the host galaxy, and preferentially aligned along the radio axis. These observations sugge st to us a scenario in which CO emission observed in high redshift gal axies is located where it forms: along the sites of star formation triggered initially by relativistic jets.

Accepted by ApJL

E-mail contact: klamer@physics.usyd.edu.au,
preprint available astro-ph/0408015

XMM-Newton study of two Narrow–Line Seyfert 1 galaxies discovered in the Sloan Digital Sky Survey

L. Foschini[1], V. Braito[2], G.G.C. Palumbo[3], G. Ponti[1,3], M. Dadina[1], R. Della Ceca[2], G. Di Cocco[1], P. Grandi[1] and G. Malaguti[1]

[1] Istituto di Astrofisica Spaziale e Fisica Cosmica (IASF) del CNR, Sezione di Bologna, Via Gobetti 101, 40129 Bologna (Italy)
[2] INAF – Osservatorio Astronomico di Brera, Via Brera 28, 20121 Milano (Italy)
[3] Dipartimento di Astronomia, Università di Bologna, via Ranzani 1, 40127 Bologna (Italy)

The Early Data Release of the Sloan Digital Sky Survey (SDSS) contains 150 Narrow–Line Seyfert 1 (NLS1) galaxies, most of them previously unknown. We present here the study of the X–ray emission from two of these active galaxies (SDSS J030639.57+000343.2 and SDSS J141519.50−003021.6), based upon *XMM-Newton* observations. The spectral and timing characteristics of the two sources are presented and compared to the typical properties of known NLS1 galaxies. We found that these two NLS1 are within the dispersion range of the typical values of this class of AGN, although with some interesting features that deserve further studies.

Accepted by Astronomy & Astrophysics

E-mail contact: foschini@bo.iasf.cnr.it,
preprint available at http://arxiv.org/abs/astro-ph/0408123

Interaction of Jets with Galactic Winds

Martin Krause[1], Max Camenzind[1]

[1] Landessternwarte Königstuhl, 69117 Heidelberg, Germany

We have used the vectorised and parallelised magnetohydrodynamics code NIRVANA on the NEC SX-5 and the new SX-6 installation in parallel mode to simulate the interaction of jets with a galactic wind that might be typical for the star-bursting radio-galaxies of the early universe.

The two simulations, one axisymmetric and one in 3D show that the jet pierces and destroys a thin and dense shell produced by the pre-installed superwind.

We suggest that small radio galaxies at high redshift might be absorbed on the blue wing due to the galactic wind shell, and possibly on the red wing due to a cooling flow. In larger sources the jet cocoon will fill the wind cavity and accelerate the shell. The Rayleigh-Taylor instability will then disrupt the shell and disperse dense, possibly star-forming fragments throughout the region.

Accepted for the annual proceedings of the high performance computing center in Stuttgart (High Performance Computing in Science and Engineering '04).

E-mail contact: M.Krause@lsw.uni-heidelberg.de,
preprint available at http://arxiv.org/abs/astro-ph/0408287

An extreme, blueshifted iron line profile in the Narrow Line Seyfert 1 PG 1402+261; an edge-on accretion disk or highly ionized absorption?

J.N. Reeves[1,2], D. Porquet[3], T.J. Turner[1,4]

[1] Laboratory for High Energy Astrophysics, Code 662, NASA Goddard Space Flight Center, Greenbelt Road, Greenbelt, MD 20771, USA
[2] Universities Space Research Association, 7501 Forbes Boulevard, Suite 206, Seabrook, MD 20706, USA
[3] Max-Plank-Institut für extraterrestrische Physik, Postfach 1312, 85741 Garching, Germany
[4] Joint Center for Astrophysics, University of Maryland Baltimore County, 1000 Hilltop Circle, Baltimore, MD 21250, USA

We report on a short *XMM-Newton* observation of the radio-quiet Narrow Line Seyfert 1 PG 1402+261. The EPIC X-ray spectrum of PG 1402+261 shows a strong excess of counts between $6-9$ keV in the rest frame. This feature can be modeled by an unusua lly strong (equivalent width 2 keV) and very broad (FWHM velocity of 110000 km s^{-1}) iron K-shell emission line. The line centroid energy at 7.3 keV appears blue-shifted with respect to the iron Kα emission band between $6.4-6.97$ keV, while th e blue-wing of the line extends to 9 keV in the quasar rest frame. The line profile can be fitted by reflection from the inner accretion disk, but an inclination angle of > 60 deg is required to model the extreme blue-wing of the line. Furthermore the ex treme strength of the line requires a geometry whereby the hard X-ray emission from PG 1402+261 above 2 keV is dominated by the pure-reflection component from the disk, while little or none of the direct hard power-law is observed. Alternatively the spec trum above 2 keV may instead be explained by an ionized absorber, if the column density is sufficiently high ($N_{\rm H} > 3 \times 10^{23}$ cm^{-2}) and if the matter is ionized enough to produce a deep ($\tau \sim 1$) iron K-shell absorption edge at 9 keV. This absorber could originate in a large column density, high velocity outflow, perhaps similar to those which appear to be observed in several other high accretion rate AGN. Further observations, especially at higher spectral resolution, are required to distinguish between the accretion disk reflection or outflow scenarios.

Accepted by ApJ.

E-mail contact: jnr@milkyway.gsfc.nasa.gov,
http://xxx.lanl.gov/abs/astro-ph/0408403

Circumnuclear Structure and Black Hole Fueling: HST/NICMOS Imaging of 250 Active and Normal Galaxies

L.K. Hunt[1] and M.A. Malkan[2]

[1] Istituto di Radioastronomia-Sezione Firenze, Largo E. Fermi 5, I-50125 Firenze, Italy
[2] Department of Astronomy, University of California, Los Angeles, CA, USA

Why are the nuclei of some galaxies more active than others? If most galaxies harbor a central massive black hole, the main difference is probably in how well it is fueled by its surroundings. We investigate the hypothesis that such a difference can be seen in the detailed circumnuclear morphologies of galaxies using several quantitatively defined features, including bars, isophotal twists, boxy and disky isophotes, and strong non-axisymmetric features in unsharp masked images. These diagnostics are applied to 250 high-resolution images of galaxy centers obtained in the near-infrared with NICMOS on HST. To guard against the influence of possible biases and selection effects, we have carefully matched samples of Seyfert 1, Seyfert 2, LINER, starburst and normal galaxies in their basic properties, taking particular care to ensure that each was observed with a similar average scale (10-15 parsecs per pixel). Several morphological differences among our five different spectroscopic classifications emerge from the analysis. The HII/starburst galaxies show the strongest deviations from smooth elliptical isophotes, while the normal galaxies and LINERS have the least disturbed morphology. The Seyfert 2 galaxies have significantly more twisted isophotes than any other category, and the early-type Seyfert 2s are significantly more disturbed than the early-type Seyfert 1s. The morphological differences between Seyfert 1s and 2s suggest that more is at work than simply the viewing angle of the central engine. They may correspond to different evolutionary stages.

Accepted by ApJ.

E-mail contact: hunt@arcetri.astro.it, preprint available at http://arxiv.org/abs/astro-ph/0408469

Flare-induced fountains and buried flares in AGN

B. Czerny[1,2] and R. Goosmann[3]

[1] Copernicus Astronomical Center, Bartycka 18, 00-716 Warsaw, Poland
[2] associated to Observatoire de Paris, LUTH, 92195 Meudon, France
[3] Observatoire de Paris, Section de Meudon, LUTH, Place Janssen, F-92195, Meudon Cedex, France

We discuss the local physical changes at the surface of an AGN accretion disk after the onset of a magnetic flare. The X-ray irradiation by a flare creates a hot spot at the disk surface where the plasma both heats up and expands in the vertical direction in order to regain the hydrostatic equilibrium. Assuming that the magnetic loop causing the flare is anchored deeply within the disk interior, we derive analytical estimates for the vertical dimension H_{hot} and the optical depth τ_{es} of the heated atmosphere as a function of the position within the spot. We perform computations for various values of the accretion rate $\dot{m}$, the fraction f_{cor} of radiation dissipated within the disk corona, and the covering factor f_{cover} of the disk surface with flare-illuminated patches. It turns out that generally we can distinguish three characteristic radial zones within the disk showing a qualitatively different behavior of the heated material. In the innermost regions of the disk (inner zone) the expansion of the disk material is restricted by strong gravitational forces. Further out, the flare source, initially above the disk, soon becomes embedded by the expanding disk atmosphere. At these intermediate disk radii (middle zone) the material is optically thick thus greatly modifying the observed radiation by multiple Compton scattering. We show exemplary spectra models obtained from Monte Carlo simulations illustrating the trends. In the outermost regions of the disk (outer zone) the expanding material is optically thin and its influence on the observed spectra is smaller but pressure gradients in radial directions should cause the development of a fountain-like dynamical structure around the flare source. We discuss the observational consequences of our results.

Accepted by Astronomy & Astrophysics

E-mail contact: bcz@camk.edu.pl

An Empirical Algorithm for Broad-band Photometric Redshifts of Quasars from the Sloan Digital Sky Survey

Michael A. Weinstein[1,2], Gordon T. Richards[3], Donald P. Schneider[1], Joshua D. Younger[3], Michael A. Strauss[3], Patrick B. Hall[3], Tamás Budavári[4], James E. Gunn[3], Donald G. York[5,6] and J. Brinkmann[7]

[1] Department of Astronomy and Astrophysics, The Pennsylvania State University, 525 Davey Laboratory, University Park, PA 16802.
[2] Department of Physics, Astronomy, and Geophysics, Connecticut College, Box 5622, 270 Mohegan Avenue, New London, CT, 06320.
[3] Princeton University Observatory, Peyton Hall, Princeton, NJ 08544.
[4] Department of Physics and Astronomy, The Johns Hopkins University, 3400 North Charles Street, Baltimore, MD 21218-2686.
[5] Department of Astronomy and Astrophysics, The University of Chicago, 5640 South Ellis Avenue, Chicago, IL 60637.
[6] Enrico Fermi Institute, The University of Chicago, 5640 South Ellis Avenue, Chicago, IL 60637.
[7] Apache Point Observatory, P.O. Box 59, Sunspot, NM 88349.

We present an empirical algorithm for obtaining photometric redshifts of quasars using 5-band Sloan Digital Sky Survey (SDSS) photometry. Our algorithm generates an empirical model of the quasar color-redshift relation, compares the colors of a quasar candidate with this model, and calculates possible photometric redshifts. Using the 3814 quasars of the SDSS Early Data Release (EDR) Quasar Catalog to generate a median color-redshift relation as a function of redshift we find that, for this same sample, 83% of our predicted redshifts are correct to within $|\Delta z| < 0.3$. The algorithm also determines the probability that the redshift is correct, allowing for even more robust photometric redshift determination for smaller, more restricted samples. We apply this technique to a set of 8740 quasar candidates (disjoint from those used to create the color-redshift relation), selected by the final version of the SDSS quasar-selection algorithm. The photometric redshifts assigned to non-quasars are restricted to a few well-defined values. In addition, 90% of the objects with spectra that have photometric redshifts between 0.8 and 2.2 are quasars with accurate ($|\Delta z| < 0.3$) photometric redshifts. Many of these quasars lie in a single region of color space; judicious application of color-cuts can effectively select quasars with accurate photometric redshifts from the SDSS database — without reference to the SDSS quasar selection algorithm. When the SDSS is complete, this technique will allow the determination of photometric redshifts for $\sim 10^6$ faint SDSS quasar candidates, enabling advances in our knowledge of the quasar luminosity function, gravitational lensing of quasars, and correlations among quasars and between galaxies.

Accepted by ApJS.

E-mail contact: gtr@astro.princeton.edu, preprint available at http://xxx.lanl.gov/abs/astro-ph/0408504

Efficient Photometric Selection of Quasars from the Sloan Digital Sky Survey: 100,000 $z < 3$ Quasars from Data Release One

Gordon T. Richards[1], Robert C. Nichol[2], Alexander G. Gray[3], Robert J. Brunner[4], Robert H. Lupton[1], Daniel E. Vanden Berk[5], Shang Shan Chong[2], Michael A. Weinstein[6,7], Donald P. Schneider[6], Scott F. Anderson[8], Jeffrey A. Munn[9], Hugh C. Harris[9], Michael A. Strauss[1], Xiaohui Fan[1]0, James E. Gunn[1], Željko Ivezić[1,8], Donald G. York[11,12] and J. Brinkmann[1]3

[1] Princeton University Observatory, Peyton Hall, Princeton, NJ 08544.
[2] Department of Physics, Carnegie Mellon University, 5000 Forbes Avenue, Pittsburgh, PA 15232.
[3] Robotics Institute, Carnegie Mellon University, 3128 Newell-Simon Hall, 5000 Forbes Avenue, Pittsburgh, PA 15213-3891.
[4] Department of Astronomy, University of Illinois at Urbana-Champaign, 1002 West Green Street, Urbana, IL 61801-3080.
[5] Department of Physics and Astronomy, University of Pittsburgh, 3941 O'Hara Street, Pittsburgh, PA 15260.
[6] Department of Astronomy and Astrophysics, The Pennsylvania State University, 525 Davey Laboratory, University Park, PA 16802.
[7] Department of Physics, Astronomy, and Geophysics, Connecticut College, Box 5622, 270 Mohegan Avenue, New London, CT, 06320.
[8] Department of Astronomy, University of Washington, Box 351580, Seattle, WA 98195.
[9] US Naval Observatory, Flagstaff Station, P.O. Box 1149, Flagstaff, AZ 86002-1149.
[10] Steward Observatory, University of Arizona, 933 North Cherry Avenue, Tucson, AZ 85721.
[11] Department of Astronomy and Astrophysics, The University of Chicago, 5640 South Ellis Avenue, Chicago, IL 60637.
[12] Enrico Fermi Institute, The University of Chicago, 5640 South Ellis Avenue, Chicago, IL 60637.
[13] Apache Point Observatory, P.O. Box 59, Sunspot, NM 88349.

We present a catalog of 100,563 unresolved, UV-excess (UVX) quasar candidates to $g = 21$ from 2099 deg^2 of the Sloan Digital Sky Survey (SDSS) Data Release One (DR1) imaging data. Existing spectra of 22,737 sources reveals that 22,191 (97.6%) are quasars; accounting for the magnitude dependence of this efficiency, we estimate that 95,502 (95.0%) of the objects in the catalog are quasars. Such a high efficiency is unprecedented in broad-band surveys of quasars. This "proof-of-concept" sample is designed to be maximally efficient, but still has 94.7% completeness to unresolved, $\lesssim 19.5$, UVX quasars from the DR1 quasar catalog. This efficient and complete selection is the result of our application of a probability density type analysis to training sets that describe the 4-D color distribution of stars and spectroscopically confirmed quasars in the SDSS. Specifically, we use a non-parametric Bayesian classification, based on kernel density estimation, to parameterize the color distribution of astronomical sources — allowing for fast and robust classification. We further supplement the catalog by providing photometric redshifts and matches to FIRST/VLA, ROSAT, and USNO-B sources. Future work needed to extend the this selection algorithm to larger redshifts, fainter magnitudes, and resolved sources is discussed. Finally, we examine some science applications of the catalog, particularly a tentative quasar number counts distribution covering the largest range in magnitude ($14.2 < g < 21.0$) ever made within the framework of a single quasar survey.

Accepted by ApJS.

E-mail contact: gtr@astro.princeton.edu,
preprint and catalog available at http://sdss.ncsa.uiuc.edu/qso/nbckde/ or http://xxx.lanl.gov/abs/astro-ph/0408505

TeV blazar gamma-ray emission produced by a cooling pile-up particle energy distribution function

Ludovic Saugé[1] and Gilles Henri[1]

[1] Laboratoire d'Astrophysique de Grenoble, Université Joseph-Fourier, BP 53, F-38041 Grenoble, France

We propose a time-dependent one-zone model based on a quasi-Maxwellian 'pile-up' distribution in order to explain the time-averaged high energy emission of TeV blazars. The instantaneous spectra are the result of the synchrotron and synchrotron self-Compton emission (SSC) of ultra-relativistic leptons. The particle energy distribution function (EDF) is computed in a self-consistent way, taking into account an injection term of fresh particles, a possible pair creation term, and the particles radiative cooling. The source term is not a usual power-law but rather a 'pile-up' distribution, which can result from the combination of a stochastic heating via second order Fermi process and radiative cooling. To validate this approach, we have performed time-averaged fits of the well-known TeV emitter Mrk 501 during the 1997 flaring activity period taking into account the attenuation of the high energy component by cosmic diffuse infrared background (DIrB) and intrinsic absorption via the pair creation process. The model can reproduce very satisfactorily the observed spectral energy distribution (SED). A high Lorentz factor is required to avoid strong pair production; in the case of smaller Lorentz factor, an intense flare in the GeV

range is predicted due to the sudden increase of soft photons density below the Klein-Nishina threshold. The possible relevance of such a scenario is discussed.

Accepted for publication in the Astrophysical Journal
E-mail contact: Ludovic.Sauge@obs.ujf-grenoble.fr, preprint available at http://arxiv.org/abs/astro-ph/0408218

Complex X-ray Absorption and the Fe Kα Profile in NGC 3516

T.J.Turner[1,2], S.B.Kraemer[2,3], I.M. George[1,2], J.N. Reeves[2,4] and M. Bottorff[5]

[1] Laboratory for High Energy Astrophysics, Code 662, NASA/GSFC, Greenbelt, MD 20771

[2] Joint Center for Astrophysics, Physics Department, University of Maryland, Baltimore County, 1000 Hilltop Circle, Baltimore, MD 21250
[3] Department of Physics, The Catholic University of America
[4] Universities Space Research Association, 7501 Forbes Blvd, Suite 206, Seabrook, MD 20706-2253
[5] Southwestern University, 1001 E. University Ave., Georgetown, TX 78626

We present data from simultaneous *Chandra*, *XMM-Newton* and *BeppoSAX* observations of the Seyfert 1 galaxy NGC 3516, taken during 2001 April and November. We have investigated the nature of the very flat observed X-ray spectrum. *Chandra* grating data show the presence of X-ray absorption lines, revealing two distinct components of the absorbing gas, one which is consistent with our previous model of the UV/X-ray absorber while the other, which is outflowing at a velocity of $\sim$ 1100 km s^{-1}, has a larger column density and is much more highly ionized. The broad-band spectral characteristics of the X-ray continuum observed with *XMM* during 2001 April, reveal the presence of a *third* layer of absorption consisting of a very large column ($\approx 2.5 \times 10^{23}$ cm^{-2}) of highly ionized gas with a covering fraction $\sim$ 50%. This low covering fraction suggests that the absorber lies within a few lt-days of the X-ray source and/or is filamentary in structure. Interestingly, these absorbers are not in thermal equilibrium with one another. The two new components are too highly ionized to be radiatively accelerated, which we suggest is evidence for a hydromagnetic origin for the outflow. Applying our model to the November dataset, we can account for the spectral variability primarily by a drop in the ionization states of the absorbers, as expected by the change in the continuum flux. When this complex absorption is accounted for we find the underlying continuum to be typical of Seyfert 1 galaxies. The spectral curvature attributed to the high column absorber, in turn, reduces estimates of the flux and extent of any broad Fe emission line from the accretion disk.

Accepted by Ap. J.

The buried Balmer-edge signatures from quasars

Makoto Kishimoto[1], Robert Antonucci[2], Catherine Boisson[3] and Omer Blaes[2]

[1] Institute for Astronomy, University of Edinburgh, Blackford Hill, Edinburgh EH9 3HJ, UK
[2] Physics Department, University of California, Santa Barbara, CA 93106, USA
[3] LUTH, FRE 2462 du CNRS, associée à l'Université Denis Diderot, Observatoire de Paris, Section de Meudon, F–92195 Meudon Cedex, France

In our previous paper, we have reported the detection of a Balmer edge absorption feature in the polarized flux of one quasar (Ton 202). We have now found similar Balmer edge features in the polarized flux of four more quasars (4C09.72, 3C95, B2 1208+32, 3C323.1), and possibly a few more, out of 14 newly observed with the VLT and Keck telescopes. In addition, we also re-observed Ton 202, but we did not detect such a dramatic feature, apparently due to polarization variability (the two observations are one-year apart). The polarization measurements of some quasars are affected by an interstellar polarization in our Galaxy, but the measurements have been corrected for this effect reasonably well.

Since the broad emission lines are essentially unpolarized and the polarization is confined only to the continuum in the five quasars including Ton 202 in both epochs, the polarized flux is considered to originate interior to the broad emission line region. The Balmer edge feature seen in the polarized flux is most simply interpreted as an intrinsic spectral feature of the quasar UV/optical continuum, or the "Big Blue Bump" emission. In this case, the edge feature seen in absorption indeed indicates the thermal and optically-thick nature of the continuum emitted. However, we also discuss other possible interpretations.

Accepted by MNRAS.

E-mail contact: mk@roe.ac.uk,
preprint available at http://uk.arxiv.org/abs/astro-ph/0408105

The Active Galaxies Newsletter is available on the World Wide Web. You can access it via the University of Manchester home page :- http://www.ast.man.ac.uk/∼rb/agn/
If you move or your e-mail address changes, please send the editor your new address. If the Newsletter repeatedly bounces back from an address then that address is deleted from the mailing list.