Active Galaxies Newsletter	*An electronic publication dedicated to the observation and theory of active galaxies*
No. 82 — January 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.

Happy New Year
Rob Beswick

Abstracts of recently accepted papers

X-ray variability of the Narrow Line Seyfert 1 Galaxy PKS 0558−504

W. Brinkmann[1], P. Arévalo[2], M. Gliozzi[3], E. Ferrero[2]

[1] Centre for Interdisciplinary Plasma Science, Max–Planck–Institut für extraterrestrische Physik, Postfach 1312, D-85741 Garching, FRG
[2] Max–Planck–Institut für extraterrestrische Physik, Postfach 1312, D-85741 Garching, FRG
[3] George Mason University, Department of Physics and Astronomy, MS 3F3, 4400 University Dr., Fairfax, VA 22030-4444, USA

We present results from several XMM-Newton observations of the radio loud Narrow-line Seyfert 1 galaxy (NLS1) PKS 0558-504. We find evidence for strong and persistent X-ray variability, both on short and long time-scales. On short time scales of $\gtrsim$ 2 hours the source varies smoothly by 15−20%; long term variations by a factor $\gtrsim$ 2 could not be resolved in the relatively short exposures: we find the source mostly in a 'low' state, in 2 out of the 11 observations in a 'high state'. X-ray flares seem to be recurrent with a time scale of $\sim$ 24 ksec which, if interpreted as the Keplerian time scale in the disc, would place the emission region just outside the last stable orbit. The X-ray spectrum of PKS 0558-504 can be well fitted by two Comptonization components, one at moderate temperatures of kT $\sim$ 4.5 keV and optical depths of $\tau \sim 2$, the other at high temperatures (kT $\gtrsim$ 50 keV) and low optical depths ($\tau \lesssim 1.0$). These parameters are, however, subject to large errors due to the inherent degeneracy of the Comptonization models. Flux variations of the source are caused by changes of the colder component only, the hot component with parameters very similar to those of BLS1 galaxies, stays constant. All results fit nicely the picture that NLS1 galaxies are lower mass objects, accreting close to the Eddington rate emitting X-rays from a very active magnetically powered accretion disc corona.

Accepted by A&A

E-mail contact: wpb@mpe.mpg.de

The Iron Unresolved Transition Array in Active Galactic Nuclei

Hagai Netzer[1]

[1]School of Physics and Astronomy, Raymond and Beverly Sackler Faculty of Exact Sciences, Tel-Aviv University, Tel-Aviv 69978, Israel

The unresolved transition array (UTA) of iron M-shell ions is a prominent absorption feature in the X-ray spectrum of many active galactic nuclei (AGNs). Modeling photoionized plasmas in attempt to match the observed silicon and oxygen lines fail to predict the level of ionization of iron as inferred by this feature. It is suggested that the discrepancy is due to underestimation of the low-temperature dielectronic recombination rates for iron M-shell ions. Modified ionization balance calculations, based on new (guessed) atomic data, support this idea. The results are shown and compared to the global properties of several observed UTAs. Implications for AGN absorbing gas are discussed including an analysis of the ionization parameter distribution in such sources. The need for real calculations of such atomic data is stressed.

Accepted by ApJ.

E-mail contact: netzer@wise.tau.ac.il

$M_{\rm BH}$–σ relation for a Complete Sample of Soft X-ray Selected AGNs

Dirk Grupe[1] **and Smita Mathur**[1]

[1] Astronomy Department, The Ohio State University, 140 W. 18th Av., Columbus, OH 43210, USA

We present black hole mass–bulge velocity dispersion relation for a complete sample of 75 soft X-ray selected AGNs: 43 broad line Seyfert 1s and 32 narrow line Seyfert 1s. We use luminosity and FWHM(Hβ) as surrogates for black hole mass and FWHM([OIII]) as a surrogate for the bulge velocity dispersion. We find that NLS1s lie below the $M_{\rm BH} - \sigma$ relation of BLS1s, confirming the Mathur et al. (2001) result. The statistical result is robust and not due to any systematic measurement error. This has important consequences towards our understanding of black hole formation and growth: black holes grow by accretion in well formed bulges, possibly after a major merger. As they grow, they get closer to the $M_{\rm BH} - \sigma$ relation for normal galaxies. The accretion is highest in the beginning and dwindles as the time goes by. Our result does not support theories of $M_{\rm BH} - \sigma$ relation in which the black hole mass is a constant fraction of the bulge mass/ velocity dispersion *at all times* or those in which bulge growth is controlled by AGN feedback.

Submitted to ApJL

E-mail contact: dgrupe@astronomy.ohio-state.edu,
preprint available at http://arxiv.org/abs/astro-ph/0312390

The Cores of the Fe K Lines in Seyfert I Galaxies Observed by the Chandra High Energy Grating

Tahir Yaqoob[1,2] **and Urmila Padmanabhan**[1]

[1] Department of Physics and Astronomy, Johns Hopkins University, Baltimore, MD 21218.
[2] Laboratory for High Energy Astrophysics, NASA/Goddard Space Flight Center, Greenbelt, MD 20771.

We report on the results of eighteen observations of the core, or peak, of the Fe Kα emission line at ~ 6.4 keV in fifteen Seyfert 1 galaxies using the *Chandra* High Energy Grating (HEG). These data afford the highest precision measurements of the peak energy of the Fe Kα line, and the highest spectral resolution measurements of the width of the core of the line to date. We were able to measure the peak energy in seventeen data sets, and, excluding a very deep observation of NGC 3783, we obtained a weighted mean of 6.404 ± 0.005 keV. In all fifteen sources the two-parameter, 99% confidence errors on the line peak energy do not exclude fluorescent $K\alpha$ line emission from Fe I, although two sources (Mkn 509 and 3C 120) stand out as very likely being dominated by $K\alpha$ emission from Fe XVII or so. We were able to measure the line core width in fourteen data sets and obtained a weighted mean of 2380 ± 760 km s^{-1} FWHM (excluding the NGC 3783 deep exposure), a little larger than the instrument resolution (~ 1860 km s^{-1} FWHM). However, there is evidence of underlying broad line emission in at least four sources. In fact, the width of the peak varies widely from source to source and it may in general have a contribution from the outer parts of an accretion disk *and* more distant matter. For the disk contribution to also peak at 6.4 keV requires greater line emissivity at hundreds of gravitational radii than has been deduced from previous studies of the Fe Kα line.

Accepted by the Astrophysical Journal, to appear in the 2004, March 20 issue.

E-mail contact: starquake.pha.jhu.edu,
preprint available from astro-ph (0311551)

Meetings

Scientific Discussion Meeting

The Impact of active galaxies on the Universe at large

The Royal Society, London

16-17th Febuary 2004

It is not clear how a universe without active galaxies would differ from the one we inhabit: however, active galaxies probably reionise the Universe, structure the inter-galactic medium and regulate star formation in their host galaxies. Observational advances at radio, infrared and X-ray wavelengths together with ever more realistic simulations of structure and galaxy formation are exploring these connections and will be the subject of this Discussion Meeting.
This meeting is organised by Professor James Binney FRS, Dr Katherine Blundell, Professor JP Ostriker and Professor Simon White FRS.

Speakers include **Professor Scott Tremaine FRS**, Princeton University, **Dr Guinevere Kauffmann**, Max-Planck-Institut fur Astrophysik, **Professor Tim Heckman**, Johns Hopkins University, Baltimore, **Professor Roger Blandford FRS**, Stanford University, **Professor Mitchell Begelman**, University of Colorado, **Dr Amy Barger**, University of Wisconsin, **Professor Piero Madau**, University of California, **Dr Martin Haehnelt**, University of Cambridge, **Dr Greg Bryan**, Oxford University, **Professor Andy Fabian FRS**, University of Cambridge, **Professor John Peacock**, University of Edinburgh, **Professor Sir Martin Rees FRS**, University of Cambridge.

- Registration and Cost:
  There is no attendance fee although registration is required. Attendees should register on-line at **www.royalsoc.ac.uk/events** Registration will close only if the capacity in the lecture theatre is exceeded.
- Poster Contributions:
  Posters are invited for this Scientific Discussion Meeting. those wishing to submit a poster should contact Katherine Hardaker (katherine.hardaker@royalsoc.ac.uk) via email. Spaces are limited and the deadline for submission is **Monday 12th January 2004**.
- Further information and on-line registration details:
  These can be found on the Royal Society website at **www.royalsoc.ac.uk/events or contact Katherine Hardaker at katherine.hardaker@royalsoc.ac.uk**

  Additionally booklet advertising this meeting, including the scientific program and and further details can also be found at http://www.ast.man.ac.uk/~rb/Impact-of-Galaxies.pdf

The Royal Society
6-9 Carlton House Terrace
London SW1Y 5AG

The evolution of starbursts

Convention Centre of the German Physical Society
Bad Honnef, Germany
16-20th August 2004

Scientific Agenda

Starbursts are a spectacular phase in the life of galaxies, with the potential of changing the appearance of the galaxy and enriching its environment with metals in galactic winds. They are a signpost of galaxy evolution, and galaxy assembly at high redshifts. Of course, they also evolve themselves, ageing as their fuel, dense gas, is consumed and the burst ceases.

Clearly, not all starbursts are born equal. Their luminosity ranges from the ultraluminous ($>10^{12}L_{\odot}$) to the moderate ($\sim 10^{10}L_{\odot}$), and we find both very compact and extended bursts. Mergers and interactions undoubtedly can trigger starburst activity, and almost always do so in extreme cases, but the correlation between moderate starbursts and both visible interactions and bars funneling the gas towards the centre may be weak.

Thus, the starburst phenomenon is central to studies of galaxy evolution and poses a number of crucial questions ideal for discussion at an international workshop.

The meeting aims at bringing together different viewpoints on the evolution of starbursts, both from the perspective of the neutral and hot ISM and the stellar component. There will be a focus on the interaction of the ISM and the stellar component, and starbursts in the local universe - though the high-redshift population will not be forgotten. Modes and triggering of star formation in different environments will be addressed as well as the properties and structure of the ISM and feedback processes.

Among the specific topics we wish to cover are:

- The triggering of starbursts: What is the role of interactions, bars and actual mergers?
- The dynamics of the stars and the gas, feedback processes and self-regulation The dating of stellar populations within bursts: This information is essential to assess the evolutionary stage a burst has reached. It provides crucial complementary information to studies of merger sequences and gas properties, and allows to find fossil burst and investigate star formation histories.
- The dense gas and its properties: Is the fraction of dense gas in all starbursts similar? How do we interpret changes of physical and chemical properties of the molecular component, and do provide windows into the evolution of optically highly obscured sources? What clues do we get from maser lines?
- The star formations rates in moderate starbursts and ULIRGs: Are there differences in star formations efficiencies? What limits the SFRs and SFEs possible for a given burst, and its spatial and temporal extent, beyond the fuel supply? Do different modes of star formation operate in ULIRGs, moderate starbursts and disk environments? What is the role of massive cluster formation and evolution?
- The hot and warm ionized gas: How (and when) is the IGM enriched by galactic winds? Do the the metals really escape (today and at high z)? What do recombination lines tell us about the ionized component?
- Starbursts at high redshift: What are Lyman break galaxies? Are submm-bright galaxies equivalent to today's ULIRGs? Are these extreme objects just the tip of iceberg, and if so, what does the bottom of the iceberg in cosmological distances look like?

Observationally, these questions require a multi-wavelength approach, to be reflected in the participants of the workshop, including the latest results from radio, IR, optical and X-ray instruments. These results have to be supplemented by advances in modelling, which we will also cover in a number of contributions.

Location:
The convention centre of the German Physical Society (Physikzentrum) is located in Bad Honnef, very close to the Rhine river and at the foot of the Drachenfels, where legendary Siegfried slew the dragon. Thus, you will find yourself in the midst of a historic and romantic part of the Rhine valley, a place very popular with tourists, too. The Physikzentrum is an ideal starting point for walks and hikes through vineyards and hills overlooking the Rhine, as well as along the bank of the Rhine itself. Arrangement of boating tours on the Rhine is also possible, and many famous castles, as well as larger cultural centres like the towns of Bonn and Cologne (with its famous cathedral) are only a short distance away.

Further information and registration details can be found at **http://www.astro.ruhr-uni-bochum.de/starbursts/** or via email to Susanne Huettemeister (huette@astro.rub.de) or Eva Manthey (manthey@astro.rub.de).

The deadline for registration is **May 15th 2004**.

Scientific Organising Committee:
Susanne Aalto (Sweden), Willem Baan (The Netherlands), Ralf-Juergen Dettmar (Germany), Phil Diamond (England), Tim Heckman (USA), Susanne Huettemeister (Germany, chair), Johan Knapen (England), Alan Pedlar (England), Nick Scoville (USA), Martin Ward (England), Karen Wills (England).

AGN Variability from X-rays to Radio

Crimean Astrophysical Observatory, Nauchny, Crimea, Ukraine
14-17 June 2004

Sponsored by Crimean Astrophysical Observatory and by the Sternberg Astronomical Institute of Moscow State University.

Attendance will be limited. Researchers who are interested in being invited to attend should send an e-mail to the organizers at agnconf@crao.crimea.ua **before 2003 February 15.**

For further details see: http://www.crao.crimea.ua/craoinfo/confs/agnconf-2004/

E-mail contact: agnconf@crao.crimea.ua

I A U Symposium No. 222 - BHSIGN Conference: The Interplay in Galactic Nuclei

Hotel Serrano, Gramado, Brasil
March 1-5, 2004
Fourth Announcement (December 15, 2003)

Important Notes:
1) VISA
2) Hotel registration (deadline Jan. 24)
3) Payment of registration fee (US$170, Jan. 24)

Dear colleague,

It is time now to worry about VISA: I know north-americans DO NEED one; other countries should check.

It is also time to make the hotel reservation and pay the registration fee to participate in the IAUS222. **Abstract registration is still open until January 10, 2004, for those who have not registered yet. Hotel reservation and the payment of the registration fee should be done until January 24, 2004.**

In order to register, please access the homepage of the Conference: http://bhsign.if.ufrgs.br, link 'register' in the menu. For the registration of your abstract, just fill out the form in the web and submit it.

For the hotel registration and payment of the registration fee, please download the corresponding 'pdf' files, which you will have to print, fill out and send via FAX (for safety reasons, as we need some personal information) to the number 55 51 3316 6510.

For your convenience, we also attach the above pdf files to the present e-mail. We remind you that the conference will be held at Hotel Serrano, and thus recommend this as your first choice, although the others are within walking distance (15 minutes). We have also made a deal with Hotel Serrano which will not charge any of the three meals (breakfast, lunch and dinner) from guests staying at the hotel.

Looking forward to see you here in Brasil next March,

Thaisa Storchi Bergmann
(Chair of the SOC)

Addendum to Fourth Announcement (December 18, 2003):

1) Sharing a room at Serrano (or other hotel)
2) Hotel cancellation
3) VISAS

1) I have received some requests from participants interested in sharing a room that their names and e-mails should be put in a list in the homepage, so that they can get in touch with each other. Thus, if you are interested in being in this list, please let us know using the e-mail:bhsign@if.ufrgs.br and we will prepare the list.

2) In order to make an hotel reservation, you need to send the hotel registration form, available at the homepage (link: register). This will guarantee your hotel reservation. If necessary, you can cancel later the reservation AT NO COST UNTIL 30 DAYS PRIOR TO THE EVENT, that is until Jan. 29th.

3) VISA: Please do not forget the VISA, and do not leave it for the last momment, because it may take more than a week to get! Please find below the addresses of two homepages where you can find relevant information regarding VISA to Brasil, but please contact also some local representative to make sure the information is updated:

http://www.brasilemb.org/
http://www.braziltourism.org/visas.shtml

Best regards,
Thaisa Storchi Bergmann
Chair of the SOC
http://bhsign.if.ufrgs.br

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.