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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

The X-ray nuclei of intermediate-redshift radio sources

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We present a *Chandra* and *XMM-Newton* spectral analysis of the nuclei of the radio galaxies and radio-loud quasars from the 3CRR sample in the redshift range $0.1 < z < 0.5$. In the range of radio luminosity sampled by these objects, mostly FRIIs, it has been clear for some time that a population of radio galaxies ('low-excitation radio galaxies') cannot easily participate in models that unify narrow-line radio galaxies and broad-line objects. We show that low-excitation and narrow-line radio galaxies have systematically different nuclear X-ray properties: while narrow-line radio galaxies universally show a heavily absorbed nuclear X-ray component, such a heavily absorbed component is rarely found in sources classed as low-excitation objects. Combining our data with the results of our earlier work on the $z < 0.1$ 3CRR sources, we discuss the implications of this result for unified models, for the origins of mid-infrared emission from radio sources, and for the nature of the apparent FRI/FRII dichotomy in the X-ray. The lack of direct evidence for accretion-related X-ray emission in FRII LERGs leads us to argue that there is a strong possibility that some, or most, FRII LERGs accrete in a radiatively inefficient mode. However, our results are also consistent with a model in which the accretion mode is the same for low- and high-excitation FRIIs, with the lower accretion luminosities in FRII LERGs attributed instead to more efficient radio luminosity production in those objects.

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preprint available at http://arxiv.org/abs/astro-ph/0603090

Structure and flux variability in the VLBI jet of BL Lacertae during the WEBT campaigns (1995–2004)

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BL Lacertae has been the target of several observing campaigns by the Whole Earth Blazar Telescope (WEBT) collaboration and is one of the best studied blazars at all accessible wavelengths. A recent analysis of the optical and radio variability indicates that part of the radio variability is correlated with the optical light curve. Here we present an analysis of a huge VLBI data set including 108 images at 15, 22, and 43 GHz obtained between 1995 and 2004. The aim of this study is to identify the different components contributing to the single-dish radio light curves. We obtain separate radio light curves for the VLBI core and jet and show that the radio spectral index of single-dish observations can be used to trace the core variability. Cross-correlation of the radio spectral index with the optical light curve indicates that the optical variations lead the radio by about 100 days at 15 GHz. By fitting the radio time lags vs. frequency, we find that the power law is steeper than expected for a freely expanding conical jet in equipartition with energy density decreasing as the square of the distance down the jet as in the Königl model. The analysis of the historical data back to 1968 reveals that during a time range of 16 years the optical variability was reduced and its correlation with the radio emission was suppressed. There is a section of the compact radio jet where the emission is weak such that flares propagating down the jet are bright first in the core region with a secondary increase in flux about 1.0 mas from the core. This illustrates the importance of direct imaging to the interpretation of multi-wavelength light curves that can be affected by several distinct components at any given time. We discuss how the complex behaviour of the light curves and correlations can be understood within the framework of a precessing helical jet model.

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Failed disk winds; a physical origin for the soft X-ray excess?

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The origin of the soft X-ray excess emission observed in many type-1 AGN has been an unresolved problem in X-ray astronomy for over two decades. We develop the model proposed Gierliński & Done (2004), which models the soft excess with heavily smeared, ionized, absorption, by including the emission that *must* be associated with this absorption. We show that, rather than hindering the ionized absorption model, the addition of the emission actually helps this model reproduce the soft excess. The emission fills in some of the absorption trough, while preserving the sharp rise at ∼1 keV, allowing the total model to reproduce the soft excess curvature from a considerably wider range of model parameters. We demonstrate that this model is capable of reproducing even the strongest soft X-ray excesses by fitting it to the *XMM-Newton* EPIC PN spectrum of PG1211+143, with good results. The addition of the emission reduces the column density required to fit these data by a factor ∼2 and reduces the smearing velocity from ∼0.28c to ∼0.2c. Gierliński & Done suggested a tentative origin for the absorption in the innermost, accelerating, region of an accretion disk wind, and we highlight the advantages of this interpretation in comparison to accretion disk reflection models of the soft excess. Associating this material with a wind off the accretion disk results in several separate problems however, namely, the radial nature, and the massive implied mass-loss rate, of the wind. We propose an origin in a 'failed wind', where the central X-ray source is strong enough to over-ionize the wind, removing the acceleration through line absorption before the material reaches escape velocity, allowing the material to fall back to the disk at larger radii.

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The co-evolution of the obscured quasar PKS1549-79 and its host galaxy: evidence for a high accretion rate and warm outflow

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We use deep optical, infrared and radio observations to explore the symbiosis between the nuclear activity and galaxy evolution in the southern compact radio source PKS1549-79 ($z = 0.1523$). The optical imaging observations reveal the presence of tidal tail features which provide strong evidence that the host galaxy has undergone a major merger in the recent past. The merger hypothesis is further supported by the detection of a young stellar population, which, on the basis of spectral synthesis modelling ofour deep VLT optical spectra, was formed 50 – 250 Myr ago and makes up a significant fraction of the total stellar mass (1 – 30%). Despite the core-jet structure of the radio source, which is consistent with the idea that the jet is pointing close to our line of sight, our HI 21cm observations reveal significant HI absorption associated with both the core and the jet. Moreover the luminous, quasar-like AGN ($M_V < -23.5$) is highly extinguished ($A_v > 4.9$) at optical wavelengths s^{-1}), and evidence that the putative supermassive black hole is does not prevent the formation of powerful relativistic jets.

Together, the observations lend strong support to the predictions of some recent numerical simulations of galaxy mergers in which the black hole grows rapidly through merger-induced accretion following the coalescence of the nuclei of two merging galaxies, and the major growth phase is largely hidden at optical wavelengths by the natal gas and dust. Although the models also predict that AGN-driven outflows will eventually remove the gas from the bulge of the host galaxy, the *visible* warm outflow in PKS1549-79 is not currently capable of doing so. However, much of the outflow may be hidden by the material obscuring the quasar and/or tied up in hotter or cooler phases of the interstellar medium.

By combining our estimates of the reddening of the quasar with the HI column derived from the 21cm radio observations we have also made the first direct estimate of the HI spin temperature in the vicinity of a luminous AGN: $T_{spin} > 3000$K.

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A Reverberation-Based Mass for the Central Black Hole in NGC 4151

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We have undertaken a new ground-based monitoring campaign to improve the estimates of the mass of the central black hole in NGC 4151. We measure the lag time of the broad Hβ line response compared to the optical continuum at 5100 Å and find a lag of $6.6^{+1.1}_{-0.8}$ days. We combine our data with the recent reanalysis of UV emission lines by Metzroth et al. to calculate a weighted mean of the black hole mass, $M_{\rm BH} = (4.57^{+0.57}_{-0.47}) \times 10^7 M_\odot$. The absolute calibration of the black hole mass is based on normalization of the AGN black hole mass – stellar velocity dispersion ($M_{\rm BH} - \sigma_*$) relationship to that of quiescent galaxies by Onken et al. The scatter in the $M_{\rm BH} - \sigma_*$ relationship suggests that reverberation-mapping based mass measurements are typically uncertain by a factor of 3–4.

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preprint available at http://www.astronomy.ohio-state.edu/ bentz/n4151.html , will be posted to astro-ph after the 4th of July holiday

Confronting X-ray Emission Models with the Highest-Redshift Kiloparsec-scale Jets: the z=3.89 Jet in Quasar 1745+624

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A newly identified kiloparsec-scale X-ray jet in the high-redshift z=3.89 quasar 1745+624 is studied with multi-frequency Very Large Array, Hubble Space Telescope, and *Chandra* X-ray imaging data. This is only the third large-scale X-ray jet beyond $z > 3$ known and is further distinguished as being the most luminous relativistic jet observed at any redshift, exceeding 10^{45} erg/s in both the radio and X-ray bands. Apart from the jet's extreme redshift, luminosity, and high inferred equipartition magnetic field (in comparison to local analogues), its basic properties such as X-ray/radio morphology and radio polarization are similar to lower-redshift examples. Its resolved linear structure and the convex broad-band spectral energy distributions of three distinct knots are also a common feature among known powerful X-ray jets at lower-redshift. Relativistically beamed inverse Compton and 'non-standard' synchrotron models have been considered to account for such excess X-ray emission in other jets; both models are applicable to this high-redshift example but with differing requirements for the underlying jet physical properties, such as velocity, energetics, and electron acceleration processes. One potentially very important distinguishing characteristic between the two models is their strongly diverging predictions for the X-ray/radio emission with increasing redshift. This is considered, though with the limited sample of three $z > 3$ jets it is apparent that future studies targeted at very high-redshift jets are required for further elucidation of this issue. Finally, from the broad-band jet emission we estimate the jet kinetic power to be no less than 10^{46} erg/s, which is about 10% of the Eddington luminosity corresponding to this galaxy's central supermassive black hole mass $\mathcal{M}_{\rm BH} \gtrsim 10^9\,\mathcal{M}_\odot$ estimated here via the virial relation. The optical luminosity of the quasar core is about ten times over Eddington, hence the inferred jet power seems to be much less than that available from mass accretion. The apparent super-Eddington accretion rate may however suggest contribution of the unresolved jet emission to the observed optical flux of the nucleus.

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Cosmic Evolution of Black Holes and Spheroids. I. The $M_{\rm BH}$- sigma Relation at z=0.36

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We test the evolution of the correlation between black hole mass and bulge velocity dispersion ($M_{\rm BH} - \sigma$), using a carefully selected sample of 14 Seyfert 1 galaxies at $z = 0.36 \pm 0.01$. We measure velocity dispersion from stellar absorption lines around Mgb (5175Å) and Fe (5270Å) using high S/N Keck spectra, and estimate black hole mass from the Hβ line width and the optical luminosity at 5100Å, based on the empirically calibrated photo-ionization method. We find a significant offset from the local relation, in the sense that velocity dispersions were smaller for given black hole masses at $z = 0.36$ than locally. We investigate various sources of systematic uncertainties and find that those cannot account for the observed offset. The measured offset is $\Delta \log M_{\rm BH} = 0.62 \pm 0.10 \pm 0.25$, i.e. $\Delta \log \sigma = 0.15 \pm 0.03 \pm 0.06$, where the error bars include a random component and an upper limit to the systematics. At face value, this result implies a substantial growth of bulges in the last 4 Gyr, assuming that the local $M_{\rm BH} - \sigma$ relation is the universal evolutionary end-point. Along with two samples of active galaxies with consistently determined black hole mass and stellar velocity dispersion taken from the literature, we quantify the observed evolution with

the best fit linear relation, $\Delta \log M_{\rm BH} = (1.66 \pm 0.43)z + (0.04 \pm 0.09)$ with respect to the local relationship of Tremaine et al. (2002), and $\Delta \log M_{\rm BH} = (1.55 \pm 0.46)z + (0.01 \pm 0.12)$ with respect to that of Ferrarese (2002). This result is consistent with the growth of black holes predating the final growth of bulges at these mass scales ($\langle\sigma\rangle$=170 km s^{-1}).

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On the dependence of the spectral parameters on the observational conditions in homogeneous time dependent models of the TeV blazars

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Most of current models of TeV blazars emission assume a Synchrotron Self-Compton mechanism where relativistic particles emit both synchrotron radiation and Inverse Compton photons. For sake of simplicity, these models usually consider only steady state emission. The spectral features are thus only related to the shape of the particle distribution, and do not depend on the timing of observations. In this letter, we study the effect of, firstly, the lag between the beginning of the injection of the fresh particles and the trigger of the observation, and secondly, of a finite injection duration. We illustrate these effects considering an analytical time-dependent model of the synchrotron emission by a monoenergetic distribution of leptons. We point out that the spectral shape can be in fact very dependent on observational conditions if the particle injection term is time-dependent, particularly taking into account the effect of the time averaging procedure on the final shape of the SED. Consequences on the acceleration process are also discussed.

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The Hard X-ray Spectral Slope as an Accretion-Rate Indicator in Radio-Quiet Active Galactic Nuclei

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We present new *XMM-Newton* observations of two luminous and high accretion-rate radio-quiet active galactic nuclei (AGNs) at $z \sim 2$. Together with archival X-ray and rest-frame optical spectra of three sources with similar properties as well as 25 moderate-luminosity radio-quiet AGNs at $z < 0.5$, we investigate, for the first time, the dependence of the hard ($\gtrsim 2$ keV) X-ray power-law photon index on the broad Hβ emission-line width and on the accretion rate across ~ 3 orders of magnitude in AGN luminosity. Provided the accretion rates of the five luminous sources can be estimated by extrapolating the well-known broad-line region size-luminosity relation to high luminosities, we find that the photon indices of these sources, while consistent with those expected from their accretion rates, are significantly higher than expected from the widths of their Hβ lines. We argue that, within the limits of our sample, the hard-X-ray photon index depends primarily on the accretion rate.

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Spatial Correlation Function of the Chandra Selected Active Galactic Nuclei

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We present the spatial correlation function analysis of non-stellar X-ray point sources in the *Chandra* Large Area Synoptic X-ray Survey of Lockman Hole Northwest (CLASXS). Our 9 ACIS-I fields cover a contiguous solid angle of 0.4 deg^2 and reach a depth of 3×10^{-15} erg cm^{-2} s^{-1} in the 2–8 keV band. We supplement our analysis with data from the Chandra Deep Field North (CDFN). The addition of this field allows better probe of the correlation function at small scales. A total of 233 and 252 sources with spectroscopic information are used in the study of the CLASXS and CDFN fields respectively.

We calculate both redshift-space and projected correlation functions in comoving coordinates, averaged over the redshift range of $0.1 < z < 3.0$, for both CLASXS and CDFN fields for a standard cosmology with $\Omega_\Lambda = 0.73, \Omega_M = 0.27$, and $h = 0.71$ ($H_0 = 100h$ km s^{-1} Mpc^{-1}). The correlation function for the CLASXS field over scales of 3 Mpc$< s <$ 200 Mpc can be modeled as a power-law of the form $\xi(s) = (s/s_0)^{-\gamma}$, with $\gamma = 1.6^{+0.4}_{-0.3}$ and $s_0 = 8.0^{+1.4}_{-1.5}$ Mpc. The redshift-space correlation function for CDFN on scales of 1 Mpc$< s <$ 100 Mpc is found to have a similar correlation length $s_0 = 8.55^{+0.75}_{-0.74}$ Mpc, but a shallower slope ($\gamma = 1.3 \pm 0.1$). The real-space correlation functions derived from the projected correlation functions, are found to be $r_0 = 8.1^{+1.2}_{-2.2}$ Mpc, and $\gamma = 2.1 \pm 0.5$ for the CLASXS field, and $r_0 = 5.8^{+1.0}_{-1.5}$ Mpc, $\gamma = 1.38^{+0.12}_{-0.14}$ for the CDFN field. By comparing the real- and redshift-space correlation functions in the combined CLASXS and CDFN samples, we are able to estimate the redshift distortion parameter $\beta = 0.4 \pm 0.2$ at an effective redshift $z = 0.94$. We compare the correlation functions for hard and soft spectra sources in the CLASXS field and find no significant difference between the two groups. We have also found that the correlation between X-ray luminosity and clustering amplitude is weak, which, however, is fully consistent with the expectation using the simplest relations between X-ray luminosity, blackhole mass, and dark halo mass.

We study the evolution of the AGN clustering by dividing the samples into 4 redshift bins over 0.1 Mpc$< z <$3.0 Mpc. We find a very mild evolution in the clustering amplitude, which show the same evolution trend found in optically selected quasars in the 2dF survey. We estimate the evolution of the bias, and find that the bias increases rapidly with redshift ($b(z = 0.45) = 0.95 \pm 0.15$and $b(z = 2.07) = 3.03 \pm 0.83$). The typical mass of the dark matter halo derived from the bias estimates show little change with redshift. The average halo mass is found to be log $(M_{halo}/M_\odot) \sim 12.1$.

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Simultaneous X-ray and optical observations of S5 0716+714 after the outburst of March 2004

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At the end of March 2004, the blazar S5 0716 + 714 underwent an optical outburst that prompted for quasi-simultaneous target-of-opportunity observations with the *INTEGRAL* and *XMM-Newton* satellites. In this paper, we report the results of the *XMM-Newton* and *INTEGRAL* OMC data analysis. The X-ray spectrum is well-represented by a concave broken power-law model, with the break at about 2 keV. In the framework of the synchrotron self-Compton model, the softer part of the spectrum, which is described by a power law of index $\alpha \simeq 1.8$ ($f_\nu \propto \nu^{-\alpha}$), is probably due to synchrotron emission, while the harder part of the spectrum, which has $\alpha \simeq 1$, is due to inverse Compton emission. The blazar shows the long and short-term variability typical of low-frequency peaked BL Lac (LBL): the former is manifested by a gradual decrease in the optical flux from the peak as observed by ground telescopes at the end of March 2004, while the latter is characterized by soft X-ray and optical flares on time scales from a few thousand seconds to few hours. We can follow spectral variations on sub-hour time scales and study their correlation with the flux variability. We find evidence that the peak energy of the time-resolved spectra is increasing with flux. The modeling of the spectral energy distribution compared with archival observations suggests that the long-term variability (from outburst to quiescence or viceversa) could be due to a change in the injected power, while the short-term variability (flares) could be explained with changes in the slope of the distribution of the electrons.

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Radio Emission on Sub-Parsec Scales from the Intermediate-Mass Black Hole in NGC 4395

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The Seyfert 1 nucleus of NGC 4395 is energized by a black hole of mass $3.6 \times 10^5 M_\odot$ (Peterson et al.), making it one of only two nuclear black holes of intermediate mass, $10^3 - 10^6 M_\odot$, detected in the radio regime. Building upon UV and X-ray evidence for outflows from this Seyfert nucleus, the VLBI High Sensitivity Array was used at 1.4 GHz to search for extended structure on scales greater than 5 mas (0.1 pc). Elongated emission was discovered, extending over 15 mas (0.3 pc) and suggesting an outflow on sub-parsec scales from this intermediate-mass black hole. The Seyfert nucleus is located at the center of an elliptical star cluster, and the elongation position angle of the sub-parsec radio structure is only 19 degrees from the star cluster's minor axis.

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A search for distant radio galaxies from SUMSS and NVSS: III. radio spectral energy distributions and the $z - \alpha$ correlation

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This is the third in a series of papers that present observations and results for a sample of 76 ultra-steep-spectrum radio sources designed to find galaxies at high redshift. Here we present multi-frequency radio observations, from the Australia Telesc ope Compact Array, for a subset of 37 galaxies from the sample. Matched resolution observations at 2.3, 4.8 and 6.2 GHz are presented for all galaxies, with the $z < 2$ galaxies additionally observed at 8.6 and 18 GHz. New angular size constraints are repo rted for 19 sources based on high resolution 4.8 and 6.2 GHz observations. Functional forms for the rest-frame spectral energy distributions are derived: 89% of the sample is well characterised by a single power law, whilst the remaining 11% show some flattening toward higher frequencies: not one source shows any evidence for high frequency steepening. We discuss the implications of this result in light of the empirical correlation between redshift and spectral index seen in flux limited samples of ra dio galaxies. Finally, a new physical mechanism to explain the redshift – spectral index correlation is posited: extremely steep spectrum radio galaxies in the local universe usually reside at the centres of rich galaxy clusters. We argue that if a high er fraction of radio galaxies, as a function of redshift, are located in environments with densities similar to nearby rich clusters, then this could be a natural interpretation for the correlation. We briefly outline our plans to pursue this line of inv estigation.

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Spectral Energy Distributions and Multiwavelength Selection of Type 1 Quasars

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We present an analysis of the mid-infrared (MIR) and optical properties of type 1 (broad-line) quasars detected by the *Spitzer Space Telescope*. The MIR color-redshift relation is characterized to $z \sim 3$, with predictions to $z = 7$. We demonstrate how combining MIR and optical colors can yield even more efficient selection of active galactic nuclei (AGN) than MIR or optical colors alone. Composite spectral energy distributions (SEDs) are constructed for 259 quasars with both Sloan Digital Sky Survey and *Spitzer* photometry, supplemented by near-IR, *GALEX*, VLA and *ROSAT* data where available. We discuss how the spectral diversity of quasars influences the determination of bolometric luminosities and accretion rates; assuming the mean SED can lead to errors as large as 50% for individual quasars when inferring a bolometric luminosity from an optical luminosity. Finally, we show that careful consideration of the shape of the mean quasar SED and its redshift dependence leads to a lower estimate of the fraction of reddened/obscured AGNs missed by optical surveys as compared to estimates derived from a single mean MIR to optical flux ratio.

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The Hard X-ray 20–40 keV AGN Luminosity Function

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We have compiled a complete extragalactic sample based on $\sim 25,000\,\mathrm{deg}^2$ to a limiting flux of $3 \times 10^{-11}\,\mathrm{ergs\,cm^{-2}\,s^{-1}}$ ($\sim 7,000\,\mathrm{deg}^2$ to a flux limit of $10^{-11}\,\mathrm{ergs\,cm^{-2}\,s^{-1}}$) in the 20 – 40 keV band with *INTEGRAL*. We have constructed a detailed exposure map to compensate for effects of non-uniform exposure. The flux-number relation is best described by a power-law with a slope of $\alpha = 1.66 \pm 0.11$. The integration of the cumulative flux per unit area leads to $f_{20-40\,\mathrm{keV}} = 2.6 \times 10^{-10}\,\mathrm{ergs\,cm^{-2}\,s^{-1}\,sr^{-1}}$, which is about 1% of the known $20 - 40\,\mathrm{keV}$ X-ray background. We present the first luminosity function of AGN in the 20–40 keV energy range, based on 38 extragalactic objects detected by the imager IBIS/ISGRI on-board *INTEGRAL*. The luminosity function shows a smoothly connected two power-law form, with an index of $\gamma_1 = 0.8$ below, and $\gamma_2 = 2.1$ above the turn-over luminosity of $L_* = 2.4 \times 10^{43}\,\mathrm{ergs\,s^{-1}}$. The emissivity of all *INTEGRAL* AGNs per unit volume is $W_{20-40\,\mathrm{keV}}(> 10^{41}\,\mathrm{ergs\,s^{-1}}) = 2.8 \times 10^{38}\,\mathrm{ergs\,s^{-1}\,h_{70}^3\,Mpc^{-3}}$. These results are consistent with those derived in the $2 - 20\,\mathrm{keV}$ energy band and do not show a significant contribution by Compton-thick objects. Because the sample used in this study is truly local ($\bar{z} = 0.022$), only limited conclusions can be drawn for the evolution of AGNs in this energy band.

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A model for the infrared emission of FSC 10214+4724

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A model for the infrared emission of the high redshift ultraluminous infrared galaxy FSC 10214+4724 is presented. The model assumes three components of emission: a dusty torus viewed edge-on, clouds that are associated with the narrow-line region and a highly obscured starburst. It is demonstrated that the presence of clouds in the narrow-line region, with a covering factor of 17%, can explain why the mid-infrared spectrum of FSC 10214+4724 shows a silicate feature in emission despite the fact that its torus is viewed edge-on. It is also shown that the same model, but with the torus viewed face-on, predicts a spectrum with silicate emission features that is characteristic of the spectra of quasars recently observed with *Spitzer*.

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Black Hole Masses and Eddington Ratios at $0.3 < z < 4$

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We study the distribution of Eddington luminosity ratios, $L_{\rm bol}/L_{\rm Edd}$, of active galactic nuclei (AGNs) discovered in the AGN and Galaxy Evolution Survey (AGES). We combine Hβ, MgII, and CIV line widths with continuum luminosities to estimate black hole (BH) masses in 407 AGNs, covering the redshift range $z \sim 0.3 - 4$ and the bolometric luminosity range $L_{\rm bol} \sim 10^{45} - 10^{47}$ erg s^{-1}. The sample consists of X-ray or mid-infrared (24μm) point sources with optical magnitude $R \leq 21.5$ mag and optical emission line spectra characteristic of AGNs. For the range of luminosity and redshift probed by AGES, the distribution of estimated Eddington ratios is well described as log-normal with a peak at $L_{\rm bol}/L_{\rm Edd} \simeq 1/4$ and a dispersion of 0.3 dex. Since additional sources of scatter are minimal, this dispersion must account for contributions from the scatter between estimated and true BH mass and the scatter between estimated and true bolometric luminosity. Therefore, we conclude that: (1) neither of these sources of error can contribute more than ~0.3 dex rms; and (2) the true Eddington ratios of optically luminous AGNs are even more sharply peaked. Because the mass estimation errors must be smaller than ~0.3 dex, we can also investigate the distribution of Eddington ratios at fixed BH mass. We show for the first time that the distribution of Eddington ratios at fixed BH mass is peaked, and that the dearth of AGNs at a factor ~ 10 below Eddington is real and not an artifact of sample selection. These results provide strong evidence that supermassive BHs gain most of their mass while radiating close to the Eddington limit, and they suggest that the fueling rates in luminous AGNs are ultimately determined by BH self-regulation of the accretion flow rather than galactic scale dynamical disturbances.

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SECOND ANNOUNCEMENT:
The Central Engine of Active Galactic Nuclei

Xi'an, China

October 16-21, 2006

Website: http://agn06.ihep.ac.cn/

This is the second announcement of the meeting *The Central Engine of Active Galactic Nuclei,* scheduled to be held in Xi'an, China, on October 16-21, 2006. Please read this carefully, as it contains a number of important updates.

PROGRAM

We are happy to report that nearly all of the originally invited speakers have now officially accepted. We will begin to fill in the remaining schedule with contributed talks, which will be selected from the registered participants in consultation with the SOC. To ensure that your request for an oral presentation be considered, we strongly encourage you to register as early as possible.

MEETING VENUE

After a thorough search, the LOC has decided that the meeting will be held on the campus of Xi'an Jiaotong University (www.xjtu.edu.cn). Jiaotong is one of the major universities in China that has strong programs in engineering and aeronautics. It has a suitable lecture hall that we can use for the meeting, a reasonably priced affiliated hotel that most of the participants can use (see below), inexpensive housing for students, and a vibrant campus atmosphere with lots of nearby restaurants.

MEETING REGISTRATION

Registration for the meeting is now open at http://agn06.ihep.ac.cn/ Because of the size of the venue, and to ensure a pleasant meeting wherein people can interact well, the meeting was originally limited to a maximum of 150 participants. Due to the unexpectedly large response by the community, we are currently attempting to find a larger lecture hall that can accommodate more people. If you have not yet registered for the meeting, please do so as soon as possible, so that we can have an early head count. The DEADLINE for registration is 21 July 2006. If you have registered but cannot come, please let us know as well, so that we can make room for others.

Due to limited resources, we regret that we cannot offer financial support. But do note that the registration fee does cover all daily lunches, the conference banquet, a one-day, all-inclusive tour of the famous Museum of Terra Cotta Warriors in Litong County, and a copy of the conference proceedings. That is quite a bargain, compared to virtually any other conferences these days.

HOTEL REGISTRATION

Participants will stay at the Nanyang Hotel (http://www.jdnyhotel.com/jian-jie-y.htm), which is affiliated with the Xi'an Jiaotong University. It is very reasonably priced, at approximately $50/night for a standard room. Registration for the hotel can be done through the meeting web site with a 20% discount and no reservation rate. The DEADLINE for registration is 1 August 2006. Less expensive accommodations for students are available, as indicated on the meeting web site.

TRAVEL and VISA

Since airfares are expensive lately, we strongly urge you to book your plane tickets as early as possible. Please be advised that most nationalities require a visa to enter China. You should allow yourselves plenty of time to get the paper work processed. If you need an invitation letter to apply for the visa, please indicate so on the registration form, or contact us if you have any specific requirements.

TOURS

A one-day tour on October 18 will be arranged as part of the meeting. The tour includes a visit to the 8th world wonder, the Museum of Terra Cotta Warriors in Litong County (Pits 1, 2, and 3), and a visit to the Royal Huaqing Resort of Tang Dynasty (hot spring bath sites for the emperor and his concubine Yang Yuhuan and the Xi'an Incident site). The cost of the tour is included in the registration fee.

In addition, we have arranged for a travel agency to help people organize more extensive tour packages either before or after the meeting. These are described on the meeting web site.

WEBSITE

All information concerning the meeting can be found at http://agn06.ihep.ac.cn/

Jobs

Postdoctoral Research Fellow in Astronomy
Department of Physics and Astronomy
Faculty of Science

25,633 - 30,607 depending on experience, Ref: 2833

Based in Milton Keynes, UK

Contract for up to three years

The Astronomy Research Group is seeking a postdoctoral researcher in extragalactic far-infrared and sub-millimetre surveys with the SCUBA-2 camera and the Japanese AKARI (formerly ASTRO-F) space telescope (for up to 3 years). The position will make use of the Open University's Guaranteed Time access to AKARI, which launched successfully in February 2006, and the SCUBA-2 All Sky Survey.

The position involves the detection of ultraluminous infrared galaxies and strong gravitational lenses in these major new wide-field surveys. Both are major legacy surveys. The AKARI mission will map the whole sky at 10-200 microns with depth and angula r resolution far exceeding IRAS. The 850 micron SCUBA-2 All Sky Survey is one of the largest Legacy Surveys to be conducted on the James Clerk Maxwell Telescope, and you will play key roles in this survey. You will have an astronomy/physics-related PhD or equivalent.

For detailed information and how to apply go to `www3.open.ac.uk/employment`, or call Tracey Moore on 01908 653229 or email t.j.moore@open.ac.uk quoting the reference number.

Closing date: **3 August 2006**. Disabled applicants who meet the essential job requirements will be interviewed. Further particulars are available in large print, disk or audiotape (minicom 01908 654901).

We promote diversity in employment and welcome applications from all sections of the community.

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.