Active Galaxies Newsletter	*An electronic publication dedicated to the observation and theory of active galaxies*
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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.

Please note that the web & email addresses for the Active Galaxies Newsletter has changed.

THE NEW EMAIL ADDRESS IS: agnews@manchester.ac.uk

THE WEB-PAGE ADDRESS IS: http://www.manchester.ac.uk/jodrellbank/~agnews

As always as editor of the newsletter I am very interested to hear any suggestions or feedback regarding the newsletter. So do not hesitate in emailing me your suggestions.

Many thanks for your continued subscription.

Rob Beswick

Abstracts of recently accepted papers

VLBI detection of an Infrared-Faint Radio Source VLBI detection of an Infrared-Faint Radio Source

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Infrared-Faint Radio Sources represent a new and unexpected class of object which is bright at radio wavelengths but unusually faint at infrared wavelengths. If, like most mJy radio sources, they were either conventional active or star-forming galaxies in the local Universe, we would expect them to be detectable at infrared wavelengths, and so their non-detection by the *Spitzer* Space Telescope is surprising. Here we report the detection of one of these sources using Very Long Baseline Interferometry, from which we conclude that the sources are driven by Active Galactic Nuclei. We suggest that these sources are either normal radio-loud quasars at high redshift or abnormally obscured radio galaxies.

Accepted by MNRAS

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preprint available at http://arxiv.org/abs/0704.2640

Monitoring the Violent Activity from the Inner Accretion Disk of the Seyfert 1.9 Galaxy NGC 2992 with RXTE

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We present the results of a one year monitoring campaign of the Seyfert 1.9 galaxy NGC 2992 with *RXTE*. Historically, the source has been shown to vary dramatically in 2–10 keV flux over timescales of years and was thought to be slowly transitioning between periods of quiescence and active accretion. Our results show that in one year the source continuum flux covered almost the entire historical range, making it unlikely that the low-luminosity states correspond to the accretion mechanism switching off. During flaring episodes we found that a highly redshifted Fe K line appears, implying that the violent activity is occurring in the inner accretion disk, within ~ 100 gravitational radii of the central black hole. We also found that the spectral index of the X-ray continuum remained approximately constant during the large amplitude variability. These observations make NGC 2992 well-suited for future multi-waveband monitoring, as a test-bed for constraining accretion models.

Accepted for publication in the September 2007 issue of ApJ.

E-mail contact: kmurphy@pha.jhu.edu,
preprint available at http://xxx.lanl.gov/abs/astro-ph/0705.3242

The X-ray Properties of the Most-Luminous Quasars from the Sloan Digital Sky Survey

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Utilizing 21 new *Chandra* observations as well as archival *Chandra* , *ROSAT*, and *XMM-Newton* data, we study the X-ray properties of a representative sample of 59 of the most optically luminous quasars in the Universe ($M_i \approx -29.3$ to -30.2) spanning a redshift range of $z \approx 1.5$–4.5. Our full sample consists of 32 quasars from the Sloan Digital Sky Survey (SDSS) Data Release 3 (DR3) quasar catalog, two additional objects in the DR3 area that were missed by the SDSS selection criteria, and 25 comparably luminous quasars at $z \gtrsim 4$. This is the largest X-ray study of such luminous quasars to date. By jointly fitting the X-ray spectra of our sample quasars, excluding radio-loud and broad absorption line (BAL) objects, we find a mean X-ray power-law photon index of $\Gamma = 1.92^{+0.09}_{-0.08}$ and constrain any neutral intrinsic absorbing material to have a mean column density of $N_{\rm H} \lesssim 2 \times 10^{21}$ cm^{-2}. We find, consistent with other studies, that Γ does not change with redshift, and we constrain the amount of allowed Γ evolution for the most-luminous quasars. Our sample, excluding radio-loud and BAL quasars, has a mean X-ray-to-optical spectral slope of $\alpha_{\rm ox} = -1.80 \pm 0.02$, as well as no significant evolution of $\alpha_{\rm ox}$ with redshift. We also comment upon the X-ray properties of a number of notable quasars, including an X-ray weak quasar with several strong narrow absorption-line systems, a mildly radio-loud BAL quasar, and a well-studied gravitationally lensed quasar.

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E-mail contact: dwjust@astro.psu.edu,
preprint available at http://arxiv.org/abs/0705.3059

The Central Kiloparsec of Seyfert and Inactive Host Galaxies: a Comparison of Two-Dimensional Stellar and Gaseous Kinematics

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We investigate the properties of the two-dimensional distribution and kinematics of ionised gas and stars in the central kiloparsecs of a matched sample of nearby active (Seyfert) and inactive galaxies, using the `SAURON` Integral Field Unit on the William Herschel Telescope. The ionised gas distributions show a range of low excitation regions such as star formation rings in Seyferts and inactive galaxies, and high excitation regions related to photoionisation by the AGN. The stellar kinematics of all galaxies in the sample show regular rotation patterns typical of disc-like systems, with kinematic axes which are well aligned with those derived from the outer photometry and which provide a reliable representation of the galactic line of nodes. After removal of the non-gravitational components due to e.g. AGN-driven outflows, the ionised gas kinematics in both the Seyfert and inactive galaxies are also dominated by rotation with global alignment between stars and gas in most galaxies. This result is consistent with previous findings from photometric studies that the large-scale light distribution of Seyfert hosts are similar to inactive hosts. However, fully exploiting the axisymmetric rotation in the gaseous velocity fields are identified that suggest the gaseous kinematics are more disturbed at small radii in the Seyfert galaxies compared with the inactive galaxies, providing a tentative link between nuclear gaseous streaming and nuclear activity.

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E-mail contact: gdumas@obs.univ-lyon1.fr,
preprint available at ftp://foehn.univ-lyon1.fr/pub/gdumas/dumas_paper.pdf

Isophotal Structure and Dust Distribution in Radio-Loud Elliptical Galaxies

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We investigate isophotal properties and dust morphology in the nuclear regions of 84 radio galaxies, imaged in the optical and near-infrared as part of *Hubble Space Telescope* snapshot surveys. We present a sample-wide trend between host galaxy isophotal structure and the inclination of dusty circumnuclear disks at the centers of 13 of these objects. We find that galaxies containing edge-on disks are invariably seen to possess boxy isophotes, while round, face-on disks are seen exclusively in objects with round or elliptical isophotes. Dust-rich sources with disky isophotes are observed only to possess dust in the form of extended filamentary lanes, and not in settled distributions like disks. As we do not expect that edge-on and face-on disks reside in different populations of galaxies, we conclude that perceived isophotal boxiness is dependent upon the angle at which the observer views the host galaxy's axis of symmetry. We discuss our results in the context of dissipative merger scenarios, and infer that dusty disks primarily reside in old, boxy remnants of gas-poor galaxy mergers, whereas filamentary dust lanes reside in younger disky remnants of gas-rich mergers.

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E-mail contact: grant@stsci.edu,
preprint available at http://www.arxiv.org/abs/0705.3642

A Photoionization Model For The Soft X-Ray Spectrum Of NGC 4151

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We present analysis of archival data from multiple XMM-Newton observations of the Seyfert 1 galaxy NGC 4151. Spectral data from the RGS instruments reveal several strong soft X-ray emission lines, chiefly from hydrogen-like and helium-like oxygen, nitrogen, neon and carbon. Radiative recombination continua (RRC) from oxygen and carbon are also detected. Our analysis suggests that the emission data are consistent with photoionization. Using the CLOUDY photoionization code, we found that, while a two-component, high column density model (1e23 cm-2) with low covering factor proved adequate in reproducing all detected Lyman series lines, it proved insufficient in modeling He-like triplets observed (neon, oxygen, and nitrogen). If resonance line data were ignored, the two-component model was sufficient to match flux from intercombination and forbidden lines. However, with the inclusion of resonance line data, He-like triplets could no longer be modeled with only two components. We found that observed oxygen G and R ratios especially were anomalous in parameter space investigated. We investigated, and were forced to dismiss, the possibility that a third purely collisional component could be responsible for enhanced resonance line contributions. We succeeded in modeling the observed spectrum with the addition of a third, lower column density (1e20.5 cm-2) component with non-zero microturbulence and high covering factor. While sufficient to reproduce observed soft X-ray flux, our model faces certain shortcomings, particularly in a less-than-ideal visual fit to the line profile. Two of the three emission model components bear similarities to components determined by Kraemer et al. (2005) in their study of NGC 4151

absorption spectra.

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Preprint available at http://arxiv.org/abs/0705.0628

Special Announcements

The Galactic Supermassive Black Hole

May 10, 2007

Princeton University Press has just released *The Galactic Supermassive Black Hole*, the first comprehensive and logically structured overview of the many ideas and discoveries pertaining to the supermassive black hole at the galactic center known as Sagittarius A*. By far the closest galactic nucleus in the universe, Sagittarius A* alone can provide us with a realistic expectation of learning about the physics of strong gravitational fields, and the impact of such fields on the behavior of matter and radiation under severe physical conditions. Its proximity will even provide the opportunity to image the black hole's shadow with mm-VLBA, directly testing one of general relativity's most enigmatic predictions–the existence of closed pockets of space-time hidden behind an event horizon.

http://press.princeton.edu/titles/8453.html
(Also available on amazon.com and other book distributors.)

Endorsements:

"A gripping high-level account of the best-studied supermassive black hole in the universe, truly a central object of modern astrophysics. Professionals, graduate students, and advanced undergraduates will all benefit from this physics-rich and authoritative tour through the heart of our galaxy. I can't wait to use it in my courses."–Niel Brandt, Pennsylvania State University

"Fulvio Melia's new book sets a high standard that will not be displaced soon. A culmination of the author's own extensive work over the past twenty years, it is an ideal resource for researchers who wish to become familiar with the state of the art on the galactic black hole. It will also be a valuable reference for experts who want the key ideas assembled coherently in one place. And it can be used as a text in graduate courses employing the galactic black hole as a vehicle to convey a range of important astrophysical topics."–Mark Morris, University of California, Los Angeles

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