Are AGN special? The environmental dependence and global impact of AGN activity

Durham–Dartmouth Extragalactic Workshop,

Durham, England 30 July–3 August 2018

http://astro.dur.ac.uk/Are_AGN_Special/

Powered by mass accretion onto super-massive black holes, Active Galactic Nuclei (AGN) are undoubtedly exotic phenomena. According to most theoretical models of galaxy formation, AGN have also had a profound impact on the way the Universe looks today. However, AGN activity is, in another sense, a common phenomenon: the finding that essentially all massive galaxies host a central supermassive black hole clearly indicates that these galaxies have all hosted AGN activity at some point during their lives. Are these AGN phases a special period in the lifetime of the galaxy that require specific environmental conditions, or are they simply a random event that can occur at any time in any galaxy?

The objective of this international workshop is to bring together observers and theorists to explore the environmental dependence and global impact of AGN activity. During the five days of the workshop we will investigate:

- What host-galaxy properties facilitate AGN activity?
- What larger-scale environments facilitate AGN activity?
- Is the high-redshift Universe a special environment for AGN activity?
- How do AGN shape the way the Universe looks?

The workshop is held in the historical city of Durham in England and includes a combination of review, invited, contributed, and poster talks, in addition to extended discussion sessions.

Scientific Organising Committee

David Alexander ● Ryan Hickox ● Richard Bower ● Marcella Brusa ● Alison Coil ● Sara Ellison ● Santiago Garcia-Burillo ● Ian McCarthy ● Adam Myers ● Priya Natarajan ● Debora Sijacki ● Thaisa Storchi-Bergmann ● Benny Trakhtenbrot

Local Organising Committee

David Rosario ● David Alexander ● Sotiria Fotopoulou ● Thomas Jackson ● Lizelke Klindt ● Elisabeta Lusso ● Jan Scholtz ● Mike DiPompeo ● Christopher Harrison ● Ryan Hickox ● George Lansbury ● Lauranne Lanz ● Allegra Santis

Venue and Locations

Oral presentations	Lecture theatre Ph8: Physics building (Rochester)
Posters and coffee	Astronomy building (Ogden Centre West)
Sunday evening buffet reception	Hatfield College Dining Hall from 6pm
Lunches	Astronomy building (Monday; Friday) Collingwood college (Tuesday; Thursday) No lunch provided on Wednesday except for Hadrians Wall excursion, where a packed lunch is given
Workshop photograph & dinner	Durham Castle from 7:15pm
Prince Bishop boat cruise	Meet at The Boathouse, Elvet Bridge at 7:15pm
Hadrians Wall excursion	Pick up outside Physics building before 1pm
Cathedral & Open Treasures	Meet at Cathedral visitor desk (guided tour starts 2:30pm)

Presentation Information

Talks – Review talks are 30+5 minutes and the invited and contributed talks are 17+3 minutes. Please check that there are no issues with your talk prior to your talk session.

Posters – Posters are displayed in the coffee area of the Astronomy building (Ogden Centre West). The poster boards allow up to standard-sized posters (A0 or 36 x 48 inches); because of limited space, standard-size posters must be orientated vertically. See the poster program for the poster identification codes. Everyone has the option to give a 1 min oral presentation of their poster.

Invited Speakers and Discussion Leaders

James Aird ● Rachael Alexandroff ● Almudena Alonso-Herrero ● Richard Bower ● Marcella Brusa ● Rebecca Canning ● Alison Coil ● Giovanni Cresci ● Colin DeGraf ● Yohan Dubois ● Sotiria Fotopoulou ● Ryan Hickox ● Stephanie LaMassa ● Debora Sijacki ● Vernesa Smolcic ● Thaisa Storchi-Bergmann ● Bram Venemans ● Benny Trakhtenbrot ● Nadia Zakamska

We encourage you to Tweet throughout the conference using #AGNSpecial18.
Our account is: @SpecialAGN18.

Workshop Programme

Sunday 29 July 2018

6.00–8.00 **Evening Reception (at Hatfield College)**

Monday 30th July 2018

8.00 **Registration (at astronomy building: OCW)**

9.00 **Welcome and Workshop Motivation (at Physics building: Ph8)**

Session 1: What host galaxy properties facilitate AGN activity?

9.20 **Session 1, block 1** – *Chair: Alexander*

Alonso-Herrero [R] Storchi-Bergmann	The host galaxies of AGN
[I]	The feeding of supermassive black holes
Hicks	How host galaxy and environment relate to the central 400 pc of local Seyfert galaxies

10.45 **Coffee Break and Poster Session**

11.25 **Session 1, block 2** – *Chair: Davies*

Habouzit	Properties of SMBH and their connection to galaxies in IllustrisTNG
Aird [I]	Are the galaxies that host AGN special? The incidence of AGN and their distribution of accretion rates as a function of galaxy properties
Jones(Mackenzie)	Does a universal mode of AGN accretion suggest AGN are not special?
Bernhard	Evidence for a mass-dependent AGN Eddington ratio distribution via the flat relationship between SFR and AGN luminosity

12.55 **Lunch (at astronomy building: OCW)**

2.00 **Session 1, block 3** – *Chair: Vestergaard*

Raimundo	The stellar and gas dynamics in the transition between black hole activity and quiescence
Whittam	Understanding the mechanical feedback from high- and low-accretion rate radio galaxies
Chang	Host galaxies of obscured AGNs and their environment
Zhao	The evolutionary link between Type 1 and Type 2 quasars by their host galaxies

3.30 **Coffee Break and Poster Session**

4.10		**Session 1, block 4** – *Chair: Lanz*
	Kocevski	Elevated black hole growth in the progenitors of compact quiescent galaxies at $z = 2$ and future prospects with JWST
	Klindt	The changing faces of quasars: what are the fundamental differences between blue and red quasars?
	Assef	Hot dust obscured galaxies
	Ginolfi	Observing the cold gas surrounding AGN-host galaxies with MUSE
5:40		**End**
7.15		**Prince Bishop Boat Cruise and Dinner**

Workshop Programme

Tuesday 31st July 2018

9.00		**Session 1, block 5** – *Chair: Rosario*
		Poster talks (session 1)
		Discussion session 1 (Chairs: Coil; LaMassa; Storchi-Bergmann)
10.20		**Coffee Break and Poster Session**
Session 2: What larger-scale environments facilitate AGN activity?		
11.00		**Session 2, block 1** – *Chair: Burtscher*
	Coil [R]	AGN clustering and environment
	McAlpine	Connecting black hole and galaxy growth within the EAGLE simulation
	Banerji	Are obscured quasars special? Host galaxies & environments from ALMA & JVLA
	Hardcastle	The hosts and environmental impact of local radio-loud AGN
12.45		**Lunch (at Collingwood College)**
2.10		**Session 2, block 2** – *Chair: Villforth*
	Smolcic [I]	Black hole mass growth across cosmic time: insights from the VLA-COSMOS 3 GHz Large Project
	Steinborn	Do galaxy mergers make AGN special?
	Barrows	The conditions of single and dual AGN in late-stage galaxy mergers
	Jadhav	Monsters on the move: a search for supermassive black holes undergoing gravitational wave recoil
3.40		**Coffee Break and Poster Session**
4.20		**Session 2, block 3** – *Chair: Fotopoulou*
	Powell	Clustering of hard X-ray-selected AGN
	Noordeh	A spectroscopic study of AGN activity in massive galaxy clusters
	Marshall	Ram pressure triggers AGN in galaxy clusters
	Overzier	The complicated environments of the most powerful AGN at high redshift: progenitors of local brightest cluster galaxies or not?
5.50		**End**

Workshop Programme

Wednesday 1st August 2018

9.00	**Session 2, block 4** – *Chair: Rosario*
	Poster talks (sessions 2 & 3)
	Discussion session 2 (Chairs: Canning; Fotopoulou; Hickox)
10.20	**Coffee Break and Poster Session**

Session 3: Is the high-redshift Universe a special environment for AGN?

11.00	**Session 3, block 1** – *Chair: Lusso*
Sijacki [R]	Supermassive black hole growth and feedback in the early Universe
Nagamine	Formation of pre-AGN via direct collapse: cosmological zoom-in hydro simulation with radiation transfer
Ricarte	Modelling the black-hole-galaxy connection over cosmic time
Barger	Is AGN growth at the highest redshifts dominated by Compton-thick Sources?
12.45	**Free afternoon including organised activities**
7.15	**Conference drinks and group photo: Durham Castle**
8.00	**Conference dinner: Durham Castle**

Workshop Programme

Thursday 2nd August 2018

9.15	**Session 3, block 2** – *Chair: Brusa*	
	Venemans [I]	The birth of giants: quasars and their host galaxies in the early universe
	Trakhtenbrot	The fastest growing SMBHs at $z \sim 5$: mapping their fast-growing hosts and their over-dense environments
	Bischetti	Ionised outflows in $z \sim 6$ QSOs are there: investigating AGN-feedback and host galaxy properties in very luminous high-redshift QSOs
	Ricci	The role of AGN in the reionization of the Universe
10.45	**Coffee Break and Poster Session**	
11.25	**Session 3, block 3** – *Chair: Rosario*	
		Poster talks (session 4)
		Discussion session 3 (Chairs: DeGraf; Trakhtenbrot)
12.45	**Lunch (at Collingwood College)**	
Session 4: How do AGN shape the way the Universe looks?		
2.10	**Session 4, block 1** – *Chair: Crenshaw*	
	Zakamska [R]	Observations of quasar-driven galactic winds
	Cresci [I]	An AGN special: feedback across cosmic epochs
	Harrison	The properties and prevalence of AGN-driven outflows during the peak of activity
	Vietri	The WISSH survey: revealing ultra-massive black-holes and powerful winds in the most luminous quasars
3.55	**Coffee Break and Poster Session**	
4.35	**Session 4, block 2** – *Chair: Alexandroff*	
	Dubois [R]	How do AGN shape the way the Universe looks?
	Scholtz	The impact of AGN feedback on star formation inferred from ALMA and hydrodynamical simulations
	Rosario	AGN feedback does not destroy cold molecular gas in local luminous Seyfert galaxies
6.00	**End**	

Workshop Programme

Friday 3rd August 2018

9.00	**Session 4, block 3** – *Chair: Lansbury*	
	Bower	Black holes and the future of galaxy formation
	Barnes	Improving AGN feedback for the next generation of cosmological simulations
	Constantin	Near-IR and radio constraints of obscured AGN and their feedback in advanced mergers
	Lanz	Do AGN lurk in special galaxies caught in the early stages of transition?
10.30	**Coffee Break and Poster Session**	
11.10	**Session 4, block 4** – *Chair: Hickox*	
	Bourne	Simulation of AGN feedback in galaxy clusters
	Terrazas	Supermassive black holes as the regulators of star formation in central galaxies
	Talia	AGN-enhanced outflows of low-ionization gas in star-forming galaxies at $1.7 < z < 4.6$
		Discussion session 4 (Chairs: Alexandroff; Bower; Brusa)
		Workshop wrap up
1.00	**Lunch (at astronomy building: OCW)**	

End of workshop

Poster Program

Posters are displayed on the middle floor of the Astronomy building (Ogden Centre West). The poster identification codes refer to the board on which each poster is displayed.

Bessiere	1A	Towards an understanding of the duty cycle of AGN flickering using quasar light echoes
Birchall	1B	The prevalence of X-ray selected AGN in dwarf galaxies
Borkar	1C	The flaring activity of Sagittarius A at 3 mm observed with ATCA
Brumback	1D	Warped disks and super-Eddington flows in X-ray binaries as an analogue to AGN accretion physics
Burtscher	1E	AGNs are not special: stellar populations in the nuclei of ultra hard X-ray selected AGNs
Calistro Rivera	1F	The fraction of accreting black holes in dusty star-forming galaxies
Carraro	1G	Co-evolution of black hole accretion and star formation in galaxies
Carroll	1H	An extreme population of heavily buried AGN: identification and host galaxies
Davies	1I	Both sides of the coin: comparing the circumnuclear characteristics of active and inactive galaxies with LLAMA
del Moral-Castro	1J	Comparing isolated active and non-active galaxies from CALIFA survey
Ebrero	1K	Obscuration events in nearby AGN
Emig	1L	The first detection of radio recombination lines in AGN
Hsu	1M	Investigating the connection between AGNs and their host galaxy properties through SED decomposition
Kuraszkiewicz	1N	Obcuration/orientation effects in the sample of medium-redshift ($0.5 < z < 1$) 3CRR sources observed by Chandra
LaMassa	1O	The hunt for red quasars: unveiling luminous obscured black hole growth
Masini	1P	Are AGN special? The NuSTAR and Chandra point of view
Riffel(Rogemar)	1Q	Stellar and gas kinematics of the first 62 AGN observed with MaNGA
Riffel(Rogerio)	1R	First 62 AGN observed with SDSS-IV MaNGA - II: resolved stellar populations
Shimizu	1S	The special properties of molecular and ionized gas in the circumnuclear environment of AGN
Simmons	1T	Merger-Free Black Hole and Galaxy Growth
Vestergaard	1U	Swift X-ray to optical SEDs of $z \sim 2$ quasars
Xu	1V	A 'Turn-on' Transition in 'Changing-look' Quasar SDSS J141324.27+530527.0
Yan	1W	The most heavily obscured quasars: extreme obscuration in reddened hosts

Canning	2/3A	The CATS survey: AGN evolution in massive galaxy clusters
DeGraf	2/3B	Signatures of supermassive black hole seed formation over cosmic time
Efthymiadou	2/3C	The influence of galaxy mergers on the star formation history of luminous AGN
Foord	2/3D	Quantifying the rate of dual AGN
Fotopoulou	2/3E	AGN evolution in the mercy of the large scale enviroment
He	2/3F	Clustering of quasars over a wide luminosity range at $z \sim 4$ with Subaru Hyper Suprime-Cam wide field imaging
Hickox	2/3G	The dawn of black holes and their evolution in the early Universe: prospects for the future with Lynx
Jones(Kristen)	2/3H	SERVing up clustering around obscured and unobscured Quasars at $z \sim 2$
Kim	2/3I	Environmental dependence on AGN activity in the SDSS late-type galaxy sample
Krishnan	2/3J	Enhancement of AGN activity in a protocluster at $z = 1.6$
Loiseau	2/3K	AGN in a sample of nearby LIRG pairs: exploring the influence of a companion
Mazzucchelli	2/3L	A multiwavelength view on massive star forming companion galaxies to high-redshift quasars
Moravec	2/3M	Massive and distant clusters of the WISE survey: extended radio sources in massive galaxy clusters at $z \sim 1$
Weston	2/3N	Spectral energy distribution analysis of WISE-selected obscured AGNs in major mergers from the SDSS
Whalen	2/3O	Probing the difference between host halos for obscured and unobscured quasars

Alexandroff	4A	Peering deep in the radio to uncover the secrets of quasar feedback
Chen	4B	Extreme outflow in an AKARI-selected ULIRG at $z = 0.5$
Circosta	4C	The SUPER survey: exploring the impact of AGN outflows with SINFONI and ALMA
Crenshaw	4D	Resolving the mechanisms of feeding and feedback in nearby AGN
Fischer	4E	Spatially resolved AGN feedback in a lensed main-sequence galaxy at $z = 2.39$
Fritz	4F	Ram pressure feeding supermassive black holes?
Garcia-Lorenzo	4G	HARMONI view of high-redshift AGN
Gnilka	4H	Spatially resolved kinematics and morphology of Mrk 3
Jackson	4I	What makes AGN special? Testing AGN feedback in cosmological hydrodynamic simulations with a complete survey of local AGN
Lansbury	4J	The Teacup: a nearby quasar and superbubble seen in X-rays
Morabito	4K	AGN feedback from radio galaxies: when surveys and cosmological simulations meet
Ramasawmy	4L	Do black holes regulate the growth of massive galaxies?
Rivera	4M	Chandra/HST analysis of 25 SDSSRM quasars
Rodriguez-Ardila	4N	Feedback in low-luminosity active galactic nucleus
Sanmartim	4O	Star formation and gas kinematics in the central kiloparsec of post-starburst quasars
Talia	4P	ALMA view of a massive spheroid progenitor: a compact rotating core of molecular gas in an AGN host at $z = 2.226$
Temple	4Q	Outflow kinematics of obscured quasars at high redshift
Zovaro	4R	Catching sub-kpc scale AGN feedback in the act in the compact steep spectrum source 4C 31.04

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