

A Centenary of Astrophysical Jets: Observation, Theory, and Future Prospects

Tuesday, 23 July 2019 - Friday, 26 July 2019

**SKA Global Headquarters, Jodrell Bank Observatory
Cheshire, United Kingdom**

Programme

Tuesday 23 July 2019

Registration (10:00 - 11:00)

Coffee/Tea (10:00 - 11:00)

Welcome – Philip Diamond – Director-General, SKA Organisation (11:00 - 11:10)

General Overview – (11:10 - 11:55) – Chair: Robert Laing (SKAO)		
Time	Title	Speaker
11:10	Jet Theory: Some Key Questions	Mitch Begelman (Colorado, USA) – [Inv.]

Launch & Acceleration: Theory & Observations – (11:55 - 12:55) – Chair: Robert Laing (SKAO)		
Time	Title	Speaker
11:55	Jets and their connection to the accretion flow	Chris Done (Durham, UK) – [Inv.]
12:25	Numerical simulations of black hole jets	Ramesh Narayan (Harvard CfA, USA) – [Inv.]
12:55	<i>Lunch Break</i>	

Launch & Acceleration + VLBI: Observations – (14:00 - 15:45) – Chair: Masanori Nakamura (ASIAA)		
Time	Title	Speaker
14:00	Comparing radio-loud Swift/BAT AGN with their radio-quiet counterparts	Maitrayee Gupta (NCAC, Poland) – [Cont.]
14:15	Strong lensing reveals jets in a sub-microJy radio quiet quasar	Philippa Hartley (SKAO, UK) – [Cont.]
14:30	Effects of Numerical Resolution and Disc Tilt on Jet Properties	Chris White (University of California, USA) – [Cont.]
14:45	VLBI studies on AGN jets	Keiichi Asada (ASIAA, Taiwan) – [Inv.]
15:15	Synthetic VLBI Imaging of Relativistic Jet Simulations: Applying Polarized Radiative Transfer Through 3D RMHD and 3D PIC Jet Calculations	Nicholas MacDonald (MPIfR, Germany) – [Cont.]
15:30	A mechanism for triple-ridge emission structure of AGN jets	Taiki Ogihara (Tohoku University, Japan) – [Cont.]
15:45	<i>Afternoon Coffee/Tea</i>	
15:45	Poster Session 1	

VLBI + Small-scale: Theory & Interpretations – (16:15 - 17:45) – Chair: Masanori Nakamura (ASIAA)		
Time	Title	Speaker
16:15	Modelling relativistic jets via evolutionary algorithms	Christian Fromm (Goethe University, Germany) – [Cont.]
16:30	Powerful blazar jets dissipate their kinetic power to radiation from a single location: the molecular torus	Adam Harvey (University of Maryland, Baltimore County, USA) – [Cont.]
16:45	Resolving the Enigma: Half a Century of VLBI Studies of Relativistic Jets	Andrei Lobanov (MPIfR, Germany) – [Cont.]
17:15	Poster Session 2	
18:00	<i>Centenary of Astrophysical Jets – Welcome Reception/Cocktail</i>	

Wednesday 24 July 2019

M87: Theory & Observations – (09:30 - 10:30) – Chair: Martin Hardcastle (Hertfordshire)		
Time	Title	Speaker
09:30	Lessons Learned from M87 - Jet collimation break as a new unification in AGN jets	Masanori Nakmura (ASIAA, Taiwan) – [Inv.]
10:00	Probing signature of black hole spin in M87 shadow in flaring state	Tomohisa Kawashima (NAO, Japan) – [Cont.]
10:15	Long-term, deep millimeter VLBI observations of M87 down to 7Rs and larger spatial scales	Jae-Young Kim (MPIfR, Germany) – [Cont.]
10:30	<i>Morning Coffee/Tea</i>	

VLBI + Small-scale: Theory & Interpretations – (11:00 - 13:00) – Chair: Martin Hardcastle (Hertfordshire)		
Time	Title	Speaker
11:00	Internal structure of relativistic jets	Vasily Beskin (LPI & MPIT, Russia) – [Inv.]
11:30	The Overall B Field Configuration of AGN Jets	Denise Gabuzda (University College Cork, Ireland) – [Cont.]
11:45	Hot, Pair Dominated Relativistic Jets	Marek Sikora (NCAC, Poland) – [Cont.]
12:00	Numerical simulation of the polarization produced by recollimation shocks in jets with an initially disordered magnetic field	Christopher Kaye (University of Central Lancashire, UK) – [Cont.]
12:15	Are BL Lac jets weakly magnetised?	Emanuele Sobacchi (Ben Gurion University of the Negev, Israel) – [Cont.]
12:30	Optical AGN jets at milliarcsecond scales	Leonid Petrov (NASA GSFC, USA) – [Cont.]
12:45	Coupling between the small and large scale magnetic field configuration in the relativistic jet of OJ 287	Ioannis Myserlis (MPIfR, Germany) – [Cont.]
13:00	<i>Lunch Break</i>	

Particle Acceleration: Theory – (14:30 - 15:30) – Chair: Beatriz Mingo (Open)		
Time	Title	Speaker
14:30	Particle acceleration at shocks in astrophysical jets	James Matthews (Oxford, UK) – [Inv.]
15:00	Plasmoid reconnection as a mechanism for rapid radiation flares from relativistic jets	Krzysztof Nalewajko (NCAC, Poland) – [Cont.]
15:15	The Feasibility of Magnetic Reconnection Powered Blazar Flares	Paul Morris (University of Oxford, UK) – [Cont.]
15:30	<i>Afternoon Coffee/Tea</i>	
15:30	Poster Session 3	

Very High-Energy, Cosmic Rays & Neutrinos – (16:00 - 18:30) – Chair: Emmanuel Bempong-Manful (Bristol)		
Time	Title	Speaker
16:00	High-energy neutrinos from AGN?	Sara Buson (Wuerzburg, Germany) – [Inv.]
16:30	The First Radio Polarization Measurement of a Gamma-ray Burst Jet	Tanmoy Laskar (University of Bath, UK) – [Cont.]
16:45	TeV Gamma-rays from jets	Jim Hinton (MPI-Heidelberg, Germany) – [Inv.]
17:15	Highlights from the VERITAS AGN Observation Program	John Quinn (University College Dublin, Ireland) – [Cont.]
17:30	Lepto-hadronic Blazar Modelling	Bruno Jiménez Fernandez (University of Bath, UK) – [Cont.]
17:45	Poster Session 4	
20:00	<i>Conference Dinner</i>	

Thursday 25 July 2019

High Energy Processes: Observations – (09:30 - 10:30) – Chair: Aneta Siemiginowska (Harvard)		
Time	Title	Speaker
09:30	The importance of resolved X-ray data for understanding extragalactic radio jets	Diana Worrall (Bristol, UK) – [Inv.]
10:00	Proper Motions from Radio to X-rays: New Results and Future Prospects	Eileen Meyer (UMBC, USA) – [Inv.]
10:30	<i>Morning Coffee/Tea</i>	

Propagation: Theory & observations – (11:00 - 12:30) – Chair: Aneta Siemiginowska (Harvard)		
Time	Title	Speaker
11:00	The remarkable survivability of AGN jets	Serguei Komissarov (Leeds, UK) – [Inv.]
11:30	Large-scale jets: observations	Robert Laing (SKAO, UK) – [Inv.]
12:00	Revisiting the Fanaroff-Riley dichotomy with the LOFAR Two-Metre Sky Survey (LoTSS)	Beatriz Mingo (The Open University, UK) – [Cont.]
12:15	Unveiling the cause of hybrid morphology radio sources (HyMoRS)	Jeremy Harwood (University of Hertfordshire, UK) – [Cont.]
12:30	<i>Lunch Break</i>	

Propagation: Theory & Observations – (14:00 - 15:15) – Chair: Herman Marshall (MIT)		
Time	Title	Speaker
14:00	Jet propagation: energy dissipation and the FRI/FRII dichotomy	Manel Perucho (Valencia, Spain) – [Inv.]
14:30	The multi-band properties of FR0 radio galaxies	Ranieri Diego Baldi (University of Southampton, UK) – [Cont.]
14:45	Numerical simulations of colliding jets in an external wind: Application to 3C 75	Gibwa Musoke (Radboud University, Netherlands) – [Cont.]
15:00	Jet-environment interaction as diagnostic of the central engine	Martin Krause (University of Hertfordshire, UK) – [Cont.]

Microquasar Jets – (15:15 - 15:45) – Chair: Herman Marshall (MIT)		
Time	Title	Speaker
15:15	50 years of Microquasar Jets	Ralph Spencer (University of Manchester, UK) – [Cont.]
15:30	Microquasar Jets	Felix Mirabel (IAFE-CONICET-UBA, Argentina) – [Cont.]
15:45	<i>Afternoon Coffee/Tea</i>	
15:45	Poster Session 5	

Feedback: Theory & Observations – (16:15 - 17:30) – Chair: Raffaella Morganti (ASTRON)		
Time	Title	Speaker
16:15	Feedback from relativistic jets in evolving galaxies	Geoff Bicknell (ANU, Australia) – [Inv.]
16:45	Is gas outflowing in a direction perpendicular to radio jets?	Davide Lena (SRON & Radboud University, Netherlands) – [Cont.]
17:00	A systematic multi-phase study of galactic feedback by jets in quasars	Miranda Jarvis (ESO, Germany) – [Cont.]
17:15	Varieties of interactions between radio galaxies and the intergalactic medium	Mark Birkinshaw (Bristol, UK) – [Inv.]
17:45	Poster Session 6	
17:45	<i>Tour – Jodrell Bank Observatory [TBD]</i>	

Friday 26 July 2019

Feedback: Theory & Observations – (09:30 - 10:30) – Chair: Mark Birkinshaw (Bristol)		
Time	Title	Speaker
09:30	Radio jets as driving mechanism of gas outflows	Raffaella Morganti (ASTRON, Netherlands) – [Inv.]
10:00	The impact of relativistic jets on the ISM of the host galaxies during the breakout phase	Clive Tadhunter (University of Sheffield, UK) – [Cont.]
10:15	Jet-driven bubbles in Fanaroff–Riley type I sources	Christopher Irwin (Tel Aviv University, Israel) – [Cont.]
10:30	<i>Morning Coffee/Tea</i>	

Lifecycle: Observations – (11:00 - 12:30) – Chair: Mark Birkinshaw (Bristol)		
Time	Title	Speaker
11:00	Radio source lifecycles from the LoTSS survey	Martin Hardcastle (Hertfordshire, UK) – [Inv.]
11:30	Energetics and duty cycles of radio galaxies: insights from models	Stas Shabala (Tasmania, Australia) – [Inv.]
12:00	Probing radio restarting activity and duty cycle in high-energy selected giant radio galaxies	Gabriele Bruni (INAF, Italy) – [Cont.]
12:15	The LOFAR Two-Metre Sky Survey view of radio-AGN in the local Universe: The most massive galaxies are always switched on	Jose Sabater Montes (University of Edinburgh, UK) – [Cont.]
12:30	<i>Lunch Break</i>	

Lifecycle: Observations – (14:00 - 15:45) – Chair: Eileen Meyer (UMBC)		
Time	Title	Speaker
14:00	Numerical modelling of Mpc scale jets - Dynamics and Energetics	Joydeep Bagchi (IUCAA, India) – [Cont.]
14:15	Jet production efficiency in the youngest radio galaxies	Anna Wójtowicz (Jagiellonian University, Poland) – [Cont.]
14:30	Giant radio galaxies as ideal laboratories to study megaparsec jets	Pratik Dabhade (IUCAA, India) – [Cont.]
14:45	Summary + Discussions on future perspectives on jets	Annalisa Celotti (SISSA, Italy) – [Inv.]
15:45	<i>Afternoon Coffee/Tea -&- Farewell</i>	

NOTES:

- **Invited Talks** are labelled **[Inv.]** on Tan Background, and will be approximately 30 mins.
- **Contributed Talks** are labelled **[Cont.]** on Plain/White Background, and will be approximately 15 mins.
- **Poster Sessions** will be approximately 30 - 45 mins per session BUT much longer after the end of Day 2. Please note that poster contributions are arranged in alphabetical order (based on author's first name).

POSTER CONTRIBUTIONS	
Name	Title
Agnieszka Kuzmich (CTP PAS, Poland)	Giant radio galaxies - high and low excitation galaxies
Aleksandr Popkov (MIPT, Russia)	Relation between parsec-scale structure and broad-band radio spectra of extragalactic radio sources from an unbiased sample
Arti Goyal (Jagiellonian University, Poland)	Blazar variability from decades to minutes timescales
BIJU KG (WMO Arts & Science College, India)	GMRT unveils the longest uninterrupted ~600 Kpc jet of a Giant radio galaxy
Carlos Carrasco-Gonzalez (IRyA-UNAM, Mexico)	Observing Magnetic Fields in Protostellar Jets

POSTER CONTRIBUTIONS Cont.	
Daria Zobnina (Lebedev Physical Inst., Russia)	AGN jet-disk system revealed by the VLBI-to-Gaia position offsets and optical polarimetric data
Dylan Bollen (Macquarie University, Australia)	Determining the spatio-kinematic structures of jets in post-AGB binaries
Eliot Ayache (University of Bath, UK)	Gamma-Ray Burst jet dynamics on a moving mesh and the origin of afterglow flares
Frederick Richardson (University College Cork, Ireland)	VLBA observations of relativistic outflows from BL Lac objects at 6-22cm wavelengths
Gabriele Bruni (INAF, Italy)	FERMI transient J1544-0649: a flaring radio-weak BL Lac
Hendrik van Eerten (University of Bath, UK)	GRB Afterglow jet analysis In The Multi-Messenger Era
Herman Marshall (MIT, USA)	The X-ray Polarization Probe Concept Study
James Davies (University of Oxford, UK)	Relevance of jet magnetic field structure for indirect searches for axion-like particles with blazars
Katarzyna Rusinek (NCAC, Poland)	Radio bimodality of Swift/BAT AGNs and SDSS quasars
Krzysztof Nalewajko (NCAC, Poland)	Orientation of the crescent image of M87*
Lena Linhoff & Simone Mender (TU Dortmund, Germany)	Multiwavelength Analysis of the TeV-Gamma-Ray Emitting Radio Galaxy NGC 1275 (3C 84)
Mahadev Pandge (Dayanand Science College, India)	A detailed study of X-ray cavities in the environment of the cool core cluster Abell 3017
Max Harvey (Durham University, UK)	Radio Galaxies: The Great Gamma-Ray Hunt
Minfeng Gu (SAO CAS, China)	The VLBI observations of jets in various AGN systems
Natalia Zywuca (North-West University, SA)	Catalogue with visual morphological classification of 32,616 radio galaxies with optical hosts
Natalia Zywuca-Hejzner (North-West University, SA)	Optical variability modelling of newly identified blazars and blazar candidates behind Magellanic Clouds
Noor Masdiana Md Said (University of Tasmania, Australia)	Variations of Sub-Parsec-Scale Jet Orientation in PKS B1144-379
Sean Mooney (University College Dublin, Ireland)	Blazars in the LOFAR Surveys Data
Sebastian Knuettel (University College Cork, Ireland)	Evidence for Helical/Toroidal B Fields in AGN Jets on Kiloparsec Scales from Faraday-Rotation Mapping
Takumi Ohmura (Kyushu University, Japan)	Two-temperature MHD study of sub-relativistic jet propagation into the Intracluster medium
Thalia Traianou (MPIfR, Germany)	Constraining the γ -ray emission location and the magnetic field strength of the blazar TXS 2013+370
Tushar Mondal (Indian Institute of Science, India)	FSRQ/BL Lac dichotomy as the magnetized advective accretion process around black holes: a unified classification of blazars
Wlodek Kluzniak (NCAC, Poland)	Asymmetric jet launching in magnetospheric star-disk interaction
Yongjun Chen (SAO CAS, China)	The Temporal Variability of the Radio Structure of B2 1420+32 in its High State
Yuh Tsunetoe (Kyoto University, Japan)	The polarization imaging in M87 jet by general relativistic radiative transfer simulation with GRMHD models
Zahir Shah (IUCAA, India)	Study on temporal and spectral behaviour of 3C 279 during 2018 January flare
Zulema Abraham (University of Sao Paulo, Brazil)	Probing the relativistic jet structure through multiwavelength analysis