

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

**Tuesday 23 July 2019 - Friday 26 July 2019**

**SKA Global Headquarters**

## **Scientific Programme**

Download the FULL conference programme here - [Conference Programme]

Download the ABSTRACT Booklet here - [Book of Abstracts]

**Key topics:**

Jet generation & launching

Propagation

Dissipation

Feedback

**Range of subjects:**

Launch & acceleration mechanism

Radiation processes

Particle acceleration

Theory (numerical & analytical simulations)

Diffusive shock acceleration, PIC, reconnection

Proper motion, VLBI and small scale jet

Large scale radio jets (observation & theory)

Superluminal motion & relativistic particles

Magnetic fields theory

Accretion modes & jets

Multi-messenger (cosmic rays, neutrinos & gravitational waves)

Winds, molecular outflows, cluster-shock & bubbles

Large scale environment

X-ray binaries, cavities & driven shocks

Gamma rays from jets/CTA

TALK Summary

**Day 1: Tuesday 23rd July**

**Jet Theory: Some Key Questions** - *Mitch Begelman (Colorado, USA)*

**Jets and their connection to the accretion flow** - *Chris Done (Durham, UK)*

**Numerical simulations of black hole jets** - *Ramesh Narayan (Harvard CfA, USA)*

**Comparing radio-loud Swift/BAT AGN with their radio-quiet counterparts** - *Maitrayee Gupta (NCAC, Poland)*

**Strong lensing reveals jets in a sub-microJy radio quiet quasar** - *Philippa Hartley (SKAO, UK)*

**Effects of Numerical Resolution and Disc Tilt on Jet Properties** - *Chris White (California, USA)*

**VLBI studies on AGN jets** - *Keiichi Asada (ASIAA, Taiwan)*

**Synthetic VLBI Imaging of Relativistic Jet Simulations: Applying Polarized Radiative Transfer Through 3D RMHD and 3D PIC Jet Calculations** - *Nicholas MacDonald (MPIfR, Germany)*

**A mechanism for triple-ridge emission structure of AGN jets** - *Taiki Ogihara (Tohoku, Japan)*

**Modelling relativistic jets via evolutionary algorithms** - *Christian Fromm (Goethe, Germany)*

**Powerful blazar jets dissipate their kinetic power to radiation from a single location: the molecular torus** - *Adam Harvey (University of Maryland, Baltimore County, USA)*

**Resolving the Enigma: Half a Century of VLBI Studies of Relativistic Jets** - *Andrei Lobanov (MPIfR, Germany)*

**Day 2: Wednesday 24th July**

**Lessons Learned from M87 - Jet collimation break as a new unification in AGN jets** - *Masanori Nakamura (ASIAA, Taiwan)*

**Probing signature of black hole spin in M87 shadow in flaring state** - *Tomohisa Kawashima (NAO, Japan)*

**Long-term, deep millimeter VLBI observations of M87 down to 7Rs and larger spatial scales** - *Jae-Young Kim (MPIfR, Germany)*

**Internal structure of relativistic jets** - *Vasily Beskin (LPI & MPIT, Russia)*

**The Overall B Field Configuration of AGN Jets** - *Denise Gabuzda (Cork, Ireland)*

**Hot, Pair Dominated Relativistic Jets - Marek Sikora (NCAC, Poland)**

**Numerical simulation of the polarization produced by recollimation shocks in jets with an initially disordered magnetic field - Christopher Kaye (UCLan, UK)**

**Are BL Lac jets weakly magnetised? - Emanuele Sobacchi (Negev, Israel)**

**Optical AGN jets at milliarcsecond scales - Leonid Petrov (NASA GSFC, USA)**

**Coupling between the small and large scale magnetic field configuration in the relativistic jet of OJ 287 - Ioannis Myserlis (MPIfR, Germany)**

**Particle acceleration at shocks in astrophysical jets - James Matthews (Oxford, UK)**

**Plasmoid reconnection as a mechanism for rapid radiation flares from relativistic jets - Krzysztof Nalewajko (NCAC, Poland)**

**The Feasibility of Magnetic Reconnection Powered Blazar Flares - Paul Morris (Oxford, UK)**

**High-energy neutrinos from AGN? - Sara Buson (Wuerzburg, Germany)**

**The First Radio Polarization Measurement of a Gamma-ray Burst Jet - Tanmoy Laskar (Bath, UK)**

**TeV Gamma-rays from jets - Jim Hinton (MPI-Heidelberg, Germany)**

**Highlights from the VERITAS AGN Observation Program - John Quinn (Dublin, Ireland)**

**Lepto-hadronic Blazar Modelling - Bruno Jiménez Fernandez (Bath, UK)**

**Day 3: Thursday 25th July**

**The importance of resolved X-ray data for understanding extragalactic radio jets - Diana Worrall (Bristol, UK)**

**Proper Motions from Radio to X-rays: New Results and Future Prospects - Eileen Meyer (UMBC, USA)**

**The remarkable survivability of AGN jets - Serguei Komissarov (Leeds, UK)**

**Large-scale jets: observations - Robert Laing (SKAO, UK)**

**Revisiting the Fanaroff-Riley dichotomy with the LOFAR Two-Metre Sky Survey (LoTSS) - Beatriz Mingo (Open University, UK)**

**Unveiling the cause of hybrid morphology radio sources (HyMoRS) - Jeremy Harwood (Hertfordshire, UK)**

**Jet propagation: energy dissipation and the FRI/FRII dichotomy - Manel Perucho (Valencia, Spain)**

**The multi-band properties of FRO radio galaxies - Ranieri Diego Baldi (Southampton, UK)**

**Numerical simulations of colliding jets in an external wind: Application to 3C 75 - Gibwa Musoke (Radboud, Netherlands)**

**Jet-environment interaction as diagnostic of the central engine - Martin Krause (Hertfordshire, UK)**

**50 years of Microquasar Jets - Ralph Spencer (Manchester, UK)**

**Microquasar Jets - Felix Mirabel (IAFE-CONICET-UBA, Argentina)**

**Feedback from relativistic jets in evolving galaxies - Geoff Bicknell (ANU, Australia)**

**Is gas outflowing in a direction perpendicular to radio jets? - Davide Lena (SRON & Radboud University, Netherlands)**

**A systematic multi-phase study of galactic feedback by jets in quasars - Miranda Jarvis (ESO, Germany)**

**Varieties of interactions between radio galaxies and the intergalactic medium - Mark Birkinshaw (Bristol, UK)**

**Day 4: Friday 26th July**

**Radio jets as driving mechanism of gas outflows - Raffaella Morganti (ASTRON, Netherlands)**

**The impact of relativistic jets on the ISM of the host galaxies during the breakout phase - Clive Tadhunter (Sheffield, UK)**

**Jet-driven bubbles in Fanaroff--Riley type I sources - Christopher Irwin (Tel Aviv, Israel)**

**Radio source lifecycles from the LoTSS survey - Martin Hardcastle (Hertfordshire, UK)**

**Energetics and duty cycles of radio galaxies: insights from models - Stas Shabala (Tasmania, Australia)**

**Probing radio restarting activity and duty cycle in high-energy selected giant radio galaxies -**  
*Gabriele Bruni (INAF, Italy)*

**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 (Edinburgh, UK)*

**Numerical modelling of Mpc scale jets - Dynamics and Energetics -**  
*Joydeep Bagchi (IUCAA, India)*

**Jet production efficiency in the youngest radio galaxies -**  
*Anna Wójtowicz (Jagiellonian, Poland)*

**Giant radio galaxies as ideal laboratories to study megaparsec jets -**  
*Pratik Dabhade (IUCAA, India)*

**Summary + Discussions on future perspectives on jets -**  
*Annalisa Celotti (SISSA, Italy)*