

Growing Black Holes: Accretion and Mergers

Scientific Organizing Committee:

S. Komossa (chair; Germany), G. Beck (South Africa), K. Belczynski (Poland), M. Branchesi (Italy), M. Colpi (Italy), M. Elvis (USA), A. Gopakumar (India), K. Holley-Bockelmann (USA), A. Ingram (UK), J.-P. Lasota (France), R. Morganti (Netherlands), C. Mundell (UK), E. Palazzi (Italy), E. Pian (Italy), L. Piro (Italy), L. Rezzolla (Germany), G. Sivakoff (Canada), A. Tchekhovskoy (USA), D.R. Upadhyay (Nepal), M. Trenti (Australia), A. Veledina (Finland), A. Zdziarski (Poland), S.-N. Zhang (China)

Local Organizing Committee:

A. Zdziarski (chair), E. Palazzi, S. Komossa

Kathmandu, May 15-20, 2022
<https://nepal.oas.inaf.it/>

Final Conference Program

Growing Black Holes: Accretion & Mergers

In memory of Sergio Colafrancesco

Kathmandu, May 15-20, 2022

April 25 & 26: Mini-school for *local* astrophysics students in Nepal, with lectures introducing the conference topics.

Sunday, May 15, at *Begnas hall*, Hotel Radisson: **16:30: Registration opens**, **18:00-21:30: Welcome reception**

Monday, May 16

Morning session

- BH shadow, accretion physics

chair person: Agnieszka Janiuk

09:00-09:05 **S. Komossa, A. Zdziarski: Welcome & Opening**

09:05-09:35 review **Alejandro Cruz-Orsio: The shadow of the supermassive black hole in M87**

09:35-09:50 **Richard Anantua: Positron emission modeling of AGN: M87 and Sgr A***

09:50-10:20 review **Jonatan Jacquemin: Magnetized turbulence, accretion and outflows**

10:20-10:50 review **Martin Ward: Progress towards a better understanding of "Changing Look" AGN**

--- coffee break

chair person: Deepika Bollimpalli

11:20-11:50 review **Andrzej Niedzwiecki: Constraining accretion flows with X-ray spectral data**

11:50-12:05 **William Alston: Understanding super-Eddington accretion using quasi-periodic oscillations in AGN**

12:05-12:20 **Andrea Santangelo: The enhanced X-ray Timing and Polarimetry mission (eXTP)**

--- lunch break

Afternoon session

- GWs, binary population I

chair person: Nial Tanvir

14:00-14:30 review **Dorota Rosinska: The discovery of gravitational waves, and merging and colliding black holes from globular clusters as sources of GWs**

14:30-15:00 review **Michela Mapelli: Populations of binary black holes: open questions and challenges**

15:00-15:15 **Maria Celeste Artale: The most likely host galaxies of a compact binary coalescence**

15:15-15:30 **Stefano Bondani: Gravitational waves from primordial black holes at the Galactic Center**
short poster flash-up talks (J.Tarrant)

--- coffee break: **group photo**

chair person: Yogesh Maharjan

16:00-16:15 **Pavan Vynatheya: Gravitational waves from quadruple stars - quadruple the fun! (?)**

16:15-16:30 **Michael Kavic: Accessing the axion via compact object binaries**

16:30-16:45 **Devendra Raj Upadhyay: Astrophysics in Nepal**

16:45-17:15 review: **Massimo della Valle: The SN-GRB connection & Memories of Sergio Colafrancesco**

Tuesday, May 17

Morning session

- TDEs, jets/AGN I

chair person: Paola Marziani

09:00-09:30 review ~~Theory of stellar tidal disruption events (TDEs)~~

09:30-10:00 review **Andreja Gomboc: Observing TDEs with the Vera Rubin Observatory LSST**

10:15-10:30 **Taeho Ryu: Fully relativistic global hydrodynamics simulation of tidal disruption events**

10:30-10:45 **Rupak Roy: Are all classified TDEs indeed stellar-disruptions by an SMBH?**

--- coffee break

chair person: Emilia Järvelä

11:05-11:35 review **Krzysztof Nalewajko: Physical processes in jets**

11:35-11:50 **Valeriia Rohoza: How to turn jets into cylinders near supermassive black holes in 3D GRMHD simulations**

11:50-12:05 **Gopal Bhatta: Exploring long-term optical and gamma-ray variability properties of blazars**

12:05-12:20 **Rohan Arun Dahale: Faraday rotation in parsec-scale AGN jets**

12:20-12:35 **Maxwell Paik: Simulations of relativistic jets breaking out of their galaxies**
short poster flash-up talks (D. Bishwakarma)

--- lunch break

Afternoon session

- Galactic Binaries, stellar-mass BHs

chair person: Andrzej Niedzwiecki

14:00-14:30 review **Deepika Bollimpalli: Variability in discs around black holes: Broadband variability and QPOs**

14:30-14:45 **Nick Kaaz: Jet formation in GRMHD wind tunnel simulations**

14:45-15:00 **Ranjeev Misra: X-ray binaries with AstroSAT**

15:00-15:15 **Andrzej Zdziarski: Accretion flow, pair production and jet in the black-hole X-ray binary MAXI J1820+070**

15:15-15:30 **Sneha Prakash Mudambi: AstroSat investigations of spectral and temporal properties of the black hole candidate MAXI J1820+070 during the rising phase of its outburst**

--- coffee break

chair person: Jonatan Jacquemin

16:00-16:15 **Akash Garg: Modelling the energy dependent fractional rms and time lags in MAXI J1535-571 as observed by AstroSat**

16:15-16:30 **Andrea Sanna: On the peculiar long-term orbital evolution of the eclipsing accreting millisecond X-ray pulsar SWIFT J1749.4-2807**

16:30-16:45 **Payaswini Saikia: Seven re-flares and two mini-outbursts: high amplitude optical variations in Swift J1910.2-0546**

16:45-17:00 **Kailash Sahu: Detection and mass measurement of the first isolated stellar-mass black hole through astrometric microlensing**

17:00-17:30 review **Andrea Santangelo: Highlights of Insight-HXMT**
short poster flash-up talks (N. Husain)

Wednesday, May 18

Morning session

- disk-jet physics II, GRBs, e.m. ctrsparts to GWs

chair person: Andreja Gomboc

09:00-09:30 review **Om Sharan Salafia: GRBs from binary mergers**

09:30-10:00 review **Agnieszka Janiuk: Structure and variability of magnetically dominated jets from accreting black holes**

10:00-10:30 review **Ore Gottlieb: Revealing the physics of black hole powered transients**

10:30-10:45 **Mathieu Renzo: Progenitors of the most massive BHs: where is the PISN gap?**

--- coffee break

chair person: Madhu Paudel

11:05-11:35 review **Andrea Melandri: Electromagnetic follow-ups of GW events**

11:35-12:05 review **Jonathan Granot: Binary neutron star mergers - insights from multi-messenger observations**

12:05-12:30 **local students introduce themselves**

short poster flash-up talks (V. D'Elia, D. Issa, B. James)

--- lunch break

after lunch: Conference excursion (to Bhaktapur)

Thursday, May 19

Morning session

- AGN II, outflows/feedback, IMBHs

chair person: Martin Ward

09:00-09:30 review **Paola Marziani: The quasar main sequence**

09:30-10:00 review **Marco Berton: Narrow-line Seyfert 1 galaxies and their rapidly growing black holes**

10:00-10:15 **Andrew Lobban: Exploring the accretion process near to a supermassive black hole in Mrk 110 with XMM-Newton, NuSTAR, and Swift**

10:15-10:30 **Victoria Toptun: Expanding a bona fide sample of intermediate-mass black holes in active galactic nuclei: X-ray confirmation of thirteen candidates with XMM-Newton and Chandra**

10:30-10:45 **Emilia Järvelä: Extended radio emission in narrow-line Seyfert 1 galaxies**

--- coffee break

chair person: Igor Chilingarian

11:15-11:30 **Ivan Katkov: Multi-wavelength view of large-scale galactic outflows**

11:30-11:45 **Giovanni Cresci: The physical properties of AGN outflows and their impact on host galaxies**

11:45-12:00 **Rosa Amelia Gonzalez-Lopezlira: The globular cluster system of Messier 106, correlated with the supermassive black hole and a relic of cosmic high noon**

12:00-12:15 **Ivan Kuzmin: Analysis of 1 million spectra from the RCSED catalog for virial estimation of the masses of the central black holes of galaxies**

12:15-12:30 **Kirill Grishin: Structural properties and environment of galaxies hosting AGN powered by low-mass black holes**

short poster flash-up talks

--- lunch break

Afternoon session

chair person: Michella Mapelli

14:00-14:15 **Vladimir Goradzhyanov: Scaling relations of intermediate mass black holes and their host galaxies**

14:15-14:30 **Mariia Demianenko: Optical variability analysis of IMBH candidates using ZTF time series**

- galaxy mergers, binary SMBHs

00:00-00:00 review ~~Supermassive binary black holes~~

14:30-14:45 Alberto Mangiagli: Counterpart rates to massive black hole binary mergers in the LISA era

14:45-15:00 Filippo Mannucci: Unveiling the missing population of the dual AGNs at sub-arcsec separations

--- coffee break

chair person: Rosa Gonzalez-Lopezlira

15:30-15:45 Rubinur Khatun: Searching for dual AGN in galaxy mergers and their effect on galaxy evolution

15:45-16:00 Sumana Nandi: A potential binary black hole candidate

16:00-16:15 Aretaios Lalakos: Bridging Bondi and event horizon scales: 3D GRMHD simulations reveal

X-shaped radio galaxy morphology

short poster flash-up talks (M. Lazarova)

18:30 Conference banquet

Friday, May 20

Morning session

- high-z BHs, mass&spin evolution; missions

chair person: Devendra Upadhyay

09:00-09:30 review Gulab Dewangan: Science highlights of AstroSat

09:30-10:00 review Nial Tanvir: The Transient High-Energy Sky and Early Universe Surveyor (THESEUS)

10:00-10:30 review Andrea Sanna/Luciano Burderi: CubeSats and distributed astronomy: from the HERMES fleet to the flight of the ALBATROS, surfing the waves of quantum space-time

10:30-10:45 Geoff Beck: Primordial black hole dark matter and the Sunyaev-Zel'dovich effect

--- coffee break

chair person: Dorota Rosinska

11:05-11:20 Igor Chilingarian: Active galactic nuclei powered by intermediate mass black holes

11:20-11:35 Olmo Piana: The mass assembly of the high-redshift black hole population

11:35-11:50 Nina Sartorio: The first accreting black holes

11:50-12:05 Beverly Lowell: Black hole spin gone MAD

12:05-12:20 Dipanweeta Bhattacharyya: Cosmic spin and mass evolution of black holes and its impact

short poster flash-up talks

--- lunch, end of conference

Date **TBD**: Chris Belczynski: Public lecture on the Discovery of Gravitational Waves (online-only; for local physics departments & conference participants)

Poster contributions:

- (1) **Valerio D'Elia**: GRB 171205A/SN 2017iuk: A local low-luminosity gamma-ray burst
- (2) **Nazma Husain**: Low-frequency break detection in the hard state of GX 339-4 with AstroSat
- (3) **Danat Issa**: Simulating neutron star merger remnant outflows with a two-moment neutrino scheme
- (4) **Bestin James**: GRB jet structure and variability studies with 3D simulations of magnetically arrested disks
- (5) **S. Komossa, D. Grupe, A. Kraus, et al.**: Project MOMO: Multimessenger astrophysics of the blazar and candidate binary supermassive black hole OJ 287

- (6) **Mariana Lazarova**: Mergers dominate the host galaxies of low-z LoBAL QSOs
- (7) **E. Palazzi, A. Rossi et al.**: The peculiar short-duration GRB 200826A and its supernova
- (8) **Justine Tarrant**: Studying patched spacetimes for binary black holes
- (9) **E. Virgili, F. Frontera, P. Rosati, et al.**: The ASTENA mission: bringing the hard X-ray/soft gamma-ray sky into focus

Poster contributions from local participants:

- (11) **Dinesh Bishwakarma**: Detection of quasiperiodic oscillation in the X-ray lightcurve of the blazar MRK 501 using Swift/XRT
- (12) **Ashok Chaudhary**: Distribution of dust color temperature, Planck's function, dust mass, and visual extinction around PSR J1240-4124
- (13) **Amar Raj Ghimire**: Study of relative abundances of gas-rich galaxies to constrain the early nucleosynthesis model
- (14) **Madhu Sudan Paudel**: Studies of dust properties in sub-structures around the white dwarf WD 0307+077 in the IRIS survey
- (15) **Anil Subedi**: Distribution of dust properties around the NGC 7023 nebula in the interstellar medium using the IRIS, AKARI and WISE surveys