The Variable Multi-Messenger Sky

Polish-German WE-Heraeus-Seminar

07 – 10 November 2022

at Forest Hotel,
Cracow suburb Przegorzaly, Poland

WILHELM UND ELSE
HERAEUS-STIFTUNG

Program

Monday, 07 November 2022

09:00 – 12:00	Arrival at the hotel and registration	
12:00 – 13:00	*LUNCH*	
13:20 – 13:30	W. Hofmann M. Ostrowski	**Opening and LOC communications**
13:30 – 13:45	S. Jorda	**About the Wilhelm and Else Heraeus-Foundation**
13:45 – 14:20	W. Hofmann	**The variable multi-messenger sky: Opportunities, challenges, tools**

I. Transient MWL Sky

Session 1: Low-frequency (radio & optical) domain

14:20 – 14:55	E. Ros	**Mapping magnetic fields around supermassive Black Holes**
14:55 – 15:30	S. Gillessen	**General relativistic effects around the galactic center black hole**
15:30 – 16:00	*COFFEE BREAK*	
16:00 – 16:35	D. Champion	**Transients in the dynamic radio sky**
16:35 – 17:10	S. Kozłowski	**The optical variability of AGN**
17:10 – 17:45	L. Wyrzykowski	**Studying the population of galactic black holes with microlensing**
17:45 – 18:00	A. Szary	**FRBs - a short review**
18:00 – 18:15	D. Meyer	**Core collapse supernova remnants**
18:15 – 18:30	A. Bartkiewicz	**An overview about masers in high-mass star-forming regions, a need for high quality counterpart data**
19:00 – 22:00	*WELCOME RECEPTION*	

Program

Tuesday, 08 November 2022

08:00	*BREAKFAST*	

Session 2: X-ray and gamma-ray domain

09:00 – 09:35	S. Casanova	**HAWC and LHAASO results, including the variable sources**
09:35 – 10:10	A. Timokhin	**Recent advances in understanding pulsar emission mechanisms**
10:10 – 10:45	A. Zdziarski	**Jets in black-hole binaries**
10:45 – 11:15	*COFFEE BREAK*	
11:15 – 11:30	A. Wierzcholska	**Is PKS 2155-304 the most exceptional VHE blazar?**
11:30 – 11:45	G. Bhatta	**Gamma-ray emission from blazars**
11:45 – 12:00	R. Prince	**Significant detection of quasi-periodic oscillation in gamma-ray blazar**
12:00 – 12:15	M. Sniegowska	**Theories of changing look phenomena**
12:15 – 12:30	M. Meyer	**Probing the intergalactic magnetic field through gamma-ray observations with the Fermi LAT and H.E.S.S.**
12:30 – 14:00	*LUNCH*	

Program

Tuesday, 08 November 2022

14:00 – 14:35	A. Markowitz	**Continuum variability in AGN**
14:35 – 15:10	M. Ackermann	**Transients with Fermi-LAT**
15:10 – 15:45	A. Barnacka	**Gravitational lenses as high-resolution telescopes**
15:45 – 16:15	*COFFEE BREAK*	
16:15 – 16:30	M. Gromadzki	**New types of transients in the era of all-sky surveys**
16:30 – 16:45	S. A. Mueller	**Resolving the variable sky of gamma-rays at one Giga electron Volt in more detail by advancing the atmospheric Cherenkov-method**
16:45 – 17:00	D. Król	**Gravitational microlensing events in the optical lightcurve of active galaxy S5 0716+714**
17:00 – 19:00	**Poster session** (with coffee, wine and fruits) *(A list of all posters is available at the bottom of the program)*	
19:00	*DINNER*	

Program

Wednesday, 09 November 2022

08:00	*BREAKFAST*	

Session 3: Very high energy gamma-rays

09:00 – 09:35	G. Sigl	**Probing possible Lorentz invariance violations with high energy cosmic particles**
09:35 – 10:10	J. Hinton	**Transients with HESS**
10:10 – 10:45	C. Pfrommer	**Electron and proton acceleration at supernova remnant shocks**
10:45 – 11:15	*COFFEE BREAK*	
11:15 – 11:50	K. Nalewajko	**Magnetic reconnection in application to relativistic jets of active galaxies**
11:50 – 12:05	M. Zacharias	**CTA 102 -- year over year receiving you**
12:05 – 12:20	A.P. Noel	**X-ray intraday variability of Markarian 421**
12:20 – 12:35	E. Kosmaczewski	**A multiwavelength view of the dark globule, DC 314.8-5.1**
12:35 – 14:00	*LUNCH*	
14:00 – 18:30	**Excursion**	
19:00	*HERAEUS DINNER*	

Program

Thursday, 10 November 2022

08:00	*BREAKFAST*	
II. Multi-Messenger Astronomy		
09:00 – 09:35	M. Bejger	**Black holes and neutron stars studied in gravitational waves**
09:35 – 10:10	M. Pohl	**High energy neutrinos**
10:10 – 10:45	P. Homola	**Ultra-high energy photons: Chapter (not yet) closed?**
10:45 – 11:15	*COFFEE BREAK*	
11:15 – 11:50	B. Reville	**Particle acceleration at ultra-relativistic shocks**
11:50 – 12:05	S. Reusch	**Optical follow-up of icecube neutrinos with the AMPEL platform**
12:05 – 12:20	S. Pustelny	**Global network of optical magnetometers as new channel for multimessanger astronomy**
12:20 – 12:35	J. Niemiec	**Electron injection at shocks in merging galaxy clusters**
12:35 – 12:55	Timon Thomas	**Cosmic ray hydrodynamics: Theory, galactic winds, and non-thermal filaments**
13:00 – 14:00	*LUNCH*	

Program

Thursday, 10 November 2022

14:00 – 14:35	M. Tarnopolski	**Statistical methods for variability studies**
14:35 – 15:20	L. Stawarz	**Constraining models for particle acceleration by the variability analysis of relativistic jets**
15:20 – 15:55	S. Wagner	**Characterizing variability**
15:55 – 16:15	Scientific organizers	**Final discussion and closing words**
16:15	**End of the seminar and departure**	

Poster list

(P1)	M. Zacharias	**ExHaLe-jet: An extended hadro-leptonic jet model for blazars**
(P2)	D. Król	**Soft X-ray structures at kiloparsec distances from the active nucleus of Centaurus A galaxy**
(P3)	R. Thimmappa	**Chandra observations of the terminal hotspots in Pictor A radio galaxy**
(P4)	D. Góra	**Triggered search for PeV-EeV tau-neutrinos with MAGIC using earth-skimming technique**
(P5)	M. Padniuk	**Searches for topological axion dark matter with a network of optical magnetometers**
(P6)	A. Bartkiewicz	**An overview about methanol masers in high-mass star-forming regions, a need for high quality counterpart data**
(P7)	I. Palit	**Time-dependent outer boundary condition to simulate clumpy flows in X-ray binaries***
(P8)	A. Wójtowicz	**Disk-jet coupling and state transitions in young radio sources**
(P9)	A. Misra	**"Investigating an X-shaped double-double radio galaxy in a post merger system**
(P10)	S. Dey	**Panchromatic SED modeling of Luminous Infrared Galaxies**
(P11)	N. Żywucka	**Optical variability modelling of newly identified blazars and blazar candidates behind Magellanic Clouds**
(P12)	E. Kosmaczewski	**A Multiwavelength View of the Dark Globule, DC 314.8-5.1**

Poster list

(P13)	S. Boula	**Hybrid-kinetic simulations of the rippled low Mach number shocks in high beta cosmic plasmas**
(P14)	G. Torralba Paz	**Prediction and anomaly detection of accelerated particles in PIC simulations using neural networks**