

II EU Workshop on Water Cherenkov Experiments for Precision Physics

17 – 19 September 2025
Kraków (Poland)

(updated: 15 June 2025)

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17 – 19 September 2025, Kraków (Poland)
<https://indico.oa.uj.edu.pl/e/wcd2025>

Topics:

- Water Cherenkov neutrino experiments
- Water Cherenkov experiments for VHE gamma rays
- Neutrino physics: theory & results
- Beyond the Standard Model
- Final states reconstruction at Water Cherenkov Detectors
- Neutrino astrophysics
- Multi-messenger astronomy
- Future experiments

Scientific Organizing Committee:

Olivier Drapier (IN2P3-CNRS LLR)
Katarzyna Kowalik (NCBJ)
Luis Labarga Echeverría (UAM)/chair
Magdalena Posiadła-Zezula (UW)
Ewa Rondio (NCBJ)
Łukasz Stawarz (UJ)
Marcin Ziembicki (PW & CAMK PAN)

Project 872549-SK2HK H2020-MSCA-RISE-2019

Local Committee:

Sabrina Casanova (IFJ PAN)
Kamil Kasprzak (UJ)
Iwona Kotko (UJ)

Oleh Kobzar (UJ)
Patrik Liniewicz (UJ)
Łukasz Stawarz (UJ)/chair
Krzysztof Ziętara (UJ)



Rationale

The II EU Workshop on Water Cherenkov Experiments for Precision Physics (WCD-2025) aims to showcase and discuss the latest developments in scientific projects utilizing Water Cherenkov Detectors (WCD), primarily for neutrino observations, including those of high-energy cosmic origin, and ground-based WCDs used for studying astrophysical sources of the highest energy gamma rays. It will also review major neutrino experiments involving non-WCD technologies, whether running, under construction, or in early planning phases. The meeting will cover key physics topics in WCD experiments: neutrino oscillations, proton decay, the physics of the Sun, supernovae, and the diffuse neutrino background, etc., as well as astrophysical sources of high-energy radiation and particles.

All oral presentations are by invitation only. Contributed presentations will be displayed as posters, accessible throughout the entire duration of the meeting. A dedicated poster session is scheduled for Wednesday, September 17th, during the Welcome Reception. Moreover, posters will be available for viewing and downloading on the conference webpage, provided that the authors agree.

This workshop is held within the context of the EU-funded research project H2020-MSCA-RISE-2019-GA872549-SK2HK. SK2HK comprises partners including LLR-CNRS (France), AGH, NCBJ, UJ, UW, WUT (Poland), UAM (Spain), with ICRR-U.Tokyo (Japan) as the main host institute.

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Olivier Drapier (Ecole Polytechnique IN2P3-CNRS Laboratoire Leprince-Ringuet Palaiseau France)

Katarzyna Kowalik (National Centre for Nuclear Research, Poland)

Luis Labarga Echeverría (Universidad Autónoma de Madrid, Spain) — **chair**

Magdalena Posiadała-Zezula (University of Warsaw, Poland)

Ewa Rondio (National Centre for Nuclear Research, Poland)

Łukasz Stawarz (Jagiellonian University, Poland)

Marcin Ziembicki (Warsaw University of Technology & Nicolaus Copernicus Astronomical Center PAS, Poland)

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Patryk Liniewicz (Jagiellonian University, Poland)

Łukasz Stawarz (Jagiellonian University, Poland) — **chair**

Krzysztof Ziętara (Jagiellonian University, Poland)

Conference Venue

**Didactic Centre of the Faculty of Law and Administration
Jagiellonian University
ul. Krupnicza 33A, 31-123 Kraków, Poland**

<https://maps.app.goo.gl/qZNGqBhpg5TKP5JBA>



Located in the center of Kraków's Old Town, this area features many hotels, restaurants, and cafes within walking distance. It is about a 20-minute commute by bus or tram to the main train station and offers convenient connections to the Kraków's airport, approximately 30-minutes by taxi and about 1 hour by city bus, depending on the traffic.

Lectures will take place in the Assembly Hall, with theater-style seating and a capacity of 560 people. Catering and posters will be displayed in the corridor on the ground floor of the building throughout the entire duration of the meeting.



Invited Speakers

Seisho Abe (Kamioka Observatory, Institute for Cosmic Ray Research, University of Tokyo, Japan)
Lauren Anthony (Imperial College London, United Kingdom)
João Pedro Athayde Marcondes de André (Institut pluridisciplinaire Hubert Curien Strasbourg, France)
Antoine Beauchêne (Department of Physics, University of Oxford, United Kingdom)
Zhen Cao (Institute of High Energy Physics, Chinese Academy of Sciences, China)
Mingjun Chen (Institute of High Energy Physics, Chinese Academy of Sciences, China)
Daniel Cookman (King's College London, United Kingdom)
Paschal Coyle (Centre national de la recherche scientifique, France)
Patrick Decowski (NIKHEF and University of Amsterdam, the Netherlands)
Marcos Dracos (Institut pluridisciplinaire Hubert Curien, France)
Philipp Eller (Technical University of Munich, Germany)
Pablo Fernández Menéndez (Donostia International Physics Center, Spain)
Alfonso Andres Garcia Soto (Instituto de Física Corpuscular - Universitat de València, Spain)
Jordan Goodman (University of Maryland, USA)
Christian Haack (Erlangen Centre for Astroparticle Physics, FAU Erlangen-Nürnberg, Germany)
Francis Halzen (University of Wisconsin-Madison, USA)
Jim Hinton (Max Planck Institute for Nuclear Physics in Heidelberg, Germany)
Yoshitaka Itow (Institute for Cosmic Ray Research, University of Tokyo, Japan)
Takaaki Kajita (University of Tokyo, Japan)
Teppei Katori (King's College London, United Kingdom)
Joanna Kiriyluk (Stony Brook University, USA)
Paweł Malecki (Institute of Nuclear Physics of the Polish Academy of Sciences, Poland)
Teresa Montaruli (University of Geneva, Switzerland)
Yuuki Nakano (University of Toyama, Japan)
Tomáš Nosek (Institute of Particle and Nuclear Physics, Charles University, Czechia)
Brian Ó Fearraigh (Istituto Nazionale di Fisica Nucleare, Sezione di Genova, Italy)
Benjamin Quilain (ILANCE - CNRS-IN2P3 & University of Tokyo, France)
Federico Sanchez (Université de Genève, Switzerland)
Hiroyuki Sekiya (Institute for Cosmic Ray Research, University of Tokyo, Japan)
Masato Shiozawa (Kamioka Observatory, Institute for Cosmic Ray Research, University of Tokyo, Japan)
Volodymyr Takhistov (QUP, High Energy Accelerator Research Organization - KEK, Japan)
Hide-Kazu Tanaka (Kamioka Observatory, Institute for Cosmic Ray Research, University of Tokyo, Japan)
Mark Vagins (Kavli Institute for the Physics and Mathematics of the Universe, University of Tokyo, Japan)
Amanda Weinstein (Iowa State University, USA)

Registration & Payment Details

Registration is available only via the Indico account. The deadline for registration is **20 July 2025**

<https://indico.oa.uj.edu.pl/e/wcd2025>

Should you have any questions regarding the logistics of the meeting, please feel free to contact the Local Organizing Committee chair at the following email address: lukasz.1.stawarz@uj.edu.pl

Registration Fee:

The registration fee for all participants is **120 EUR**. This fee includes all coffee breaks and the Welcome Reception (accompanying persons are welcome at no additional charge). The fee should be paid via bank transfer before **20 July 2025**; bank details are provided below:

Bank name: Bank Polska Kasa Opieki SA

Bank address: Żubra 1, 01-066 Warszawa

IBAN: PL04 1240 2294 1978 0010 7072 2467

BIC SWIFT: PKOPPLPW

Account holder: Jagiellonian University

Account holder address: Golebia 24, 31-007 Krakow, Poland

Purpose: WCD2025: *name of the participant*

An official "Representations on Maintaining a Bank Account" document is available on Indico in the Overview section and also [here](#). An invoice will be issued upon confirmation of payment of the registration fee via bank transfer. This invoice will include the billing address and VAT number provided by a participant in the Registration Form.

Timetable

	1st DAY: Wednesday (17.09)	2nd DAY: Thursday (18.09)	3rd DAY: Friday (19.09)
9:00	Session I Main Neutrino WCD Experiments	Session IV Theory & Results	Session VII Astrophysical Context
9:30			
10:00			
10:30	COFFEE BREAK	COFFEE BREAK	
11:00	Session I Main Neutrino WCD Experiments <i>(cont.)</i>	Session IV Theory & Results <i>(cont.)</i>	COFFEE BREAK
11:30			Session VIII Future Neutrino Experiments & Closing
12:00			
12:30	LUNCH BREAK	LUNCH BREAK	
13:00			
13:30			
14:00	Session II Other Neutrino Experiments	Session V Beyond the Standard Model	
14:30			
15:00			
15:30	COFFEE BREAK	COFFEE BREAK	
16:00	Session III WCD Gamma-ray Experiments	Session VI Reconstruction	
16:30			
17:00			
17:30	WELCOME RECEPTION & POSTER SESSION	SOCIAL EVENT	
18:00			
18:30			
19:00			
19:30			
20:00			

17 September – WEDNESDAY (Day 1)

9:00–10:30 Session I – Main Neutrino WCD Experiments

chair: Luis Labarga Echeverría

“Introduction: Water Cherenkov Detectors” (30’)

Takaaki Kajita (University of Tokyo, Japan)

“Super-Kamiokande” (30’)

Hiroyuki Sekiya (Institute for Cosmic Ray Research, University of Tokyo, Japan)

“Hyper-Kamiokande” (30’)

Masato Shiozawa (Institute for Cosmic Ray Research, University of Tokyo, Japan)

10:30–11:00 COFFEE BREAK

11:00–12:30 Session I – Main Neutrino WCD Experiments (cont.)

chair: Olivier Drapier

“IceCube” (30’)

Francis Halzen (University of Wisconsin-Madison, USA)

“KM3Net” (30’)

Paschal Coyle (Centre national de la recherche scientifique, France)

“Ancillary/test beams: IWCD & WCTE” (15’)

Lauren Anthony (Imperial College London, United Kingdom)

“Ancillary/test beams: ANNIE” (15’)

Amanda Weinstein (Iowa State University, USA)

12:30–14:00 LUNCH BREAK

14:00–15:30 Session II – Other Neutrino Experiments

chair: Magdalena Posiadala-Zezula

“SNO+” (20’)

Daniel Cookman (King's College London, United Kingdom)

“JUNO” (20’)

João Pedro Athayde Marcondes de André (IPHC Strasbourg/IN2P3/CNRS, France)

“KamLAND-(Zen)” (20’)

Patrick Decowski (NIKHEF and University of Amsterdam, the Netherlands)

“Gd in WC Detectors” (30’)

Mark Vagins (IPMU, University of Tokyo, Japan)

15:30–16:00 COFFEE BREAK

16:00–17:20 Session III – WCD Gamma-ray Experiments

chair: Katarzyna Kowalik

“VHE γ -rays: HAWC” (30’)

Jordan Goodman (University of Maryland, USA)

“VHE γ -rays: LHAASO” (30’)

Zhen Cao (Institute of High Energy Physics, Chinese Academy of Sciences, China)

“VHE γ -rays: SWGO” (20’)

Jim Hinton (Max Planck Institute for Nuclear Physics in Heidelberg, Germany)

17:30–20:30 WELCOME RECEPTION & POSTER SESSION

18 September – THURSDAY (Day 2)

9:00–10:30 Session IV – Theory & Results

chair: Ewa Rondio

“Neutrino Interactions” (30’)

Federico Sanchez (Université de Genève, Switzerland)

“Neutrino Generators” (30’)

Seisho Abe (Kamioka Observatory, Institute for Cosmic Ray Research, University of Tokyo, Japan)

“Neutrino Oscillation” (30’)

Pablo Fernández Menéndez (Donostia International Physics Center, Spain)

10:30–11:00 COFFEE BREAK

11:00–12:30 Session IV – Theory & Results (cont.)

chair: Katarzyna Kowalik

“Solar Neutrino Oscillation Results and Future Prospect” (30’)

Yuuki Nakano (University of Toyama, Japan)

“Atmospheric Neutrino Oscillation Results” (30’)

Philipp Eller (Technical University of Munich, Germany)

“Long Baseline Neutrino Oscillation Results” (30’)

Tomáš Nosek (Institute of Particle and Nuclear Physics, Charles University, Czechia)

12:30–14:00 LUNCH BREAK

14:00–15:30 Session V – Beyond the Standard Model

chair: Magdalena Posiadała-Zezula

“Proton Decay” (30’)

Hide-Kazu Tanaka (Kamioka Observatory, Institute for Cosmic Ray Research, University of Tokyo, Japan)

“Dark Matter” (30’)

Volodymyr Takhistov (QUP, High Energy Accelerator Research Organization - KEK, Japan)

“Lorentz invariance & CPT” (30’)

Teppei Katori (King’s College London, United Kingdom)

15:30–16:00 COFFEE BREAK

16:00–17:30 Session VI – Reconstruction

chair: Marcin Ziembicki

“Reconstruction: SK/HK” (30’)

Benjamin Quilain (ILANCE - CNRS-IN2P3 & University of Tokyo, France)

“Reconstruction: IceCube” (30’)

Christian Haack (Erlangen Centre for Astroparticle Physics, FAU Erlangen-Nürnberg, Germany)

“Reconstruction: KM3Net” (30’)

Brían Ó Fearraigh (Istituto Nazionale di Fisica Nucleare, Sezione di Genova, Italy)

17:30–20:30 SOCIAL EVENT

19 September – FRIDAY (Day 3)

9:00–11:00 Session VII – Astrophysical Context

chair: Łukasz Stawarz

“Neutrinos from the Outer Region of the Sun; Solar Flare & Solar Atmospheric Neutrinos” (15’)

Yuuki Nakano (University of Toyama, Japan)

“Cosmic-ray Muon Physics with Water Cherenkov Detectors” (15’)

Yuuki Nakano (University of Toyama, Japan)

“Supernova Physics with Neutrinos by Very Large Detectors” (20’)

Mark Vagins (IPMU, University of Tokyo, Japan)

“Diffuse Supernova Neutrino Background” (20’)

Antoine Beauchêne (Department of Physics, University of Oxford, United Kingdom)

“Sources of High Energy Neutrinos” (20’)

Joanna Koryluk (Stony Brook University, USA)

“Multi-messenger Astronomy” (30’)

Teresa Montaruli (University of Geneva, Switzerland)

11:00–11:30 COFFEE BREAK

11:30–12:45 Session VIII – Future Neutrino Experiments

chair: Olivier Drapier

“Future Experiments: ESS-nuSB” (30’)

Marcos Dracos (Institut pluridisciplinaire Hubert Curien, France)

“Future Experiments: P-ONE” (15’)

Paweł Małecki (Institute of Nuclear Physics of the Polish Academy of Sciences, Poland)

“Future Experiments: TAMBO” (15’)

Alfonso Andres Garcia Soto (Instituto de Física Corpuscular - Universitat de València, Spain)

“Future Experiments: HUNT” (15’)

Mingjun Chen (Institute of High Energy Physics, Chinese Academy of Sciences, China)

12:45–13:20 Closing

chair: Marcin Ziembicki

“HyperK Instrumentation Highlights” (30’)

Yoshitaka Itow (Institute for Cosmic Ray Research, University of Tokyo, Japan)

“About SK2HK; Thanks, and Farewell” (5’)

Olivier Drapier (SOC)