

# Frontiers and Careers

in Nuclear and Hadronic Physics

- 2023 -

Erin Seroka (GWU), Phoebe Sharp (GWU)  
and Yannick Wunderlich (U. Bonn)

October 29th, 2023



# Introduction



Welcome to the Workshop

## **Frontiers and Careers in Nuclear and Hadronic Physics - 2023**

the Pre-Conference of the **EINN2023** Conference,  
held at the [Annabelle Hotel](#) in [Paphos, Cyprus](#).

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At **Frontiers and Careers**, we want to give you, our attendees, opportunities to:

- ◇ Present and discuss your own research and thereby make yourself visible,
- ◇ Gain insights into Opportunities and Methods for Careers in both Academia and Industry ⇒ 7 [high-level speakers](#) have been [invited](#) for this purpose,
- ◇ Network and establish professional connections, both with invited speakers as well as among PhD-students and PostDocs alike.

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We hope that we can thus provide you with a [good preparation](#) for your future [Careers](#), all of this in a friendly and relaxed atmosphere.

## Sponsors

With gratitude we mention the sponsorship from the following institutions/grants:



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Department of  
Physics

Young Researcher Attendance Grant



**HIM**

**HELMHOLTZ**

Helmholtz-Institut Mainz

As well as:

- ◇ Jefferson Lab,
- ◇ Jefferson Science Associates, LLC,
- ◇ Brookhaven National Laboratory.

# Organizing Committee



## US Chair: Erin Seroka

- ◇ PhD student at George Washington University
- ◇ PhD-thesis in exp. nuclear physics (*advisor*: Prof. Axel Schmidt)
- ◇ Areas of expertise: short range correlations, neutron detection



## Co US-Chair: Phoebe Sharp





- ◇ PhD student at George Washington University
- ◇ PhD-thesis in exp. nuclear physics (*advisor*: Prof. Axel Schmidt)
- ◇ Areas of expertise: short range correlations, photoproduction at JLab



## EU-Chair: Yannick Wunderlich

- ◇ Postdoctoral Researcher at University of Bonn
- ◇ PhD in exp. hadron physics at U. Bonn in December 2018 (*advisor*: Prof. Reinhard Beck)
- ◇ Areas of expertise: partial-wave analysis, data analysis, error-propagation methods

# Schedule Information - Day 1 (So. 29/10)


09:00		
	<b>Welcome: Welcome</b> Erin Seroka, Phoebe Sharp, Yannick Wunderl 	09:30 - 10:00
10:00	<b>Academic Writing</b> Melanie Conrad Communicating nuclear science to the general public Prof. Shelly Leshar 	10:00 - 10:30 10:30 - 11:00
11:00	<b>Coffee Break</b> d-fine: analytical, quantitative, tech. Christian Kappen	11:00 - 11:30 11:30 - 12:00
12:00	<b>Academic career-development in the EU</b> Lunch Break: Lunch Studying Two Nucleon Interactions through rho0 photoproduction at Jefferson Lab Phoebe Sharp	12:00 - 12:30 12:30 - 13:50 13:50 - 14:10
14:00	<b>X17 discovery potential from <math>\gamma d \rightarrow e^+e^-pn</math> with neutron tagging</b> Cornelis J.G. Mommsers 	14:10 - 14:30
	<b>The all-charm tetraquark and its contribution to two photon processes</b> Panagiotis Kalamidas 	14:30 - 14:50
15:00	<b>Exploring Phase structure of the Schwinger model on superconducting Quantum Computers</b> Pranay Naredi	14:50 - 15:10

	<b>Coffee Break</b> How to get a "real job" in Data Science Anastasia Karavdina 	15:10 - 16:00 16:00 - 16:30
	<b>Career Opportunities from Fundamental Nuclear Physics to Patient Treatments</b> Cynthia Keppel Discussion with Industry Professionals: Career Panel Phoebe Sharp	16:30 - 17:00 17:00 - 18:00
18:00		
19:00	<b>Workshop Dinner</b>	18:30 - 20:30
20:00		

- ◇ 6 Career Talks:  
(25 min. talk  $\oplus$  5 min. discussion)
- ◇ 4 Research Talks: (15  $\oplus$  5) min.

# Schedule Information - Day 2 (Mo. 30/10)

09:00		
10:00	Improved constraints for axion-like particles from 3-photon events at e+ e- colliders	Aleksandr Pustynsev 09:50 - 10:10
	Search for Light Dark Matter with the DarkMESA Experiment	Saskia Plura 10:10 - 10:30
	Scale Separation in Exotic Atoms	Sotiris Pitelis  10:30 - 10:50
11:00	Coffee Break	10:50 - 11:30
	Study of Neutral-Pion Pair Production in Two-Photon Scattering at BESIII	Max Leibmann  11:30 - 11:50
12:00	Small Angle Initial State Radiation Analysis of the Pion Form Factor at BESIII	Yasemin Scheihaas  11:50 - 12:10
	Academic Position: EU and US	Silvia Niccolai 12:10 - 12:40
13:00	Lunch	12:40 - 14:00
14:00	Improved Limits on Lepton-Flavor-Violating Decays of Light Pseudoscalars via Spin-Dependent $\mu \rightarrow e \gamma$ Conversion	Frederic Noël 
	Investigation of two-particle contributions to nucleon matrix elements	Yan Li  14:20 - 14:40
	Simulating Lattice Gauge Theories with Continuous Flows	Frau Bhavna Prasad  14:40 - 15:00
15:00	Lattice Chern-Simons term for (2+1)-dimensional QED	Herr Syed Muhammad Ali Hassan 15:00 - 15:20

	Coffee Break	15:20 - 16:00
16:00	Pion and kaon transverse momentum-dependent parton distribution functions in lattice QCD	Jacopo Tarelli 16:00 - 16:20
	Exploring Gluon Momentum Fraction in Mesons through Lattice Quantum Chromodynamics Simulations	Luis Alberto Rodriguez Chacon
	The Plasma Window as a Vacuum-Atmosphere Interface for Measurements of Stellar Neutron-Induced Reaction Cross Sections	Cphir Ruitim 
17:00	Survey	17:00 - 17:10
18:00		
19:00	Social Event	18:30 - 20:30
20:00		

- ◇ 1 Career Talk:  
(25 min. talk  $\oplus$  5 min. discussion)
- ◇ 12 Research Talks: (15  $\oplus$  5) min.



## Invited Speakers

- ◇ Melanie Conrad (Charité Berlin) - *Academic Writing*  
*Research Group Leader in Immunology, Mentor for Sci. Writing and Presentations*
- ◇ Shelly Leshner (UW-La Crosse) - *Communicating nuclear science to the general public*  
*PhD in Nucl. Physics (U. Kentucky), Chair of Physics Dept., Physics Podcaster*
- ◇ Christian Kappen (d-fine) - *d-fine: analytical. quantitative. tech.*  
*Mathematics PhD (U. Münster), Manager at d-fine, Risk-Modeling Expert*
- ◇ Giannis Koutsou (The Cyprus Institute) - *Academic career-development in the EU*  
*PhD in Theoretical Physics (U. of Cyprus), Assoc. Professor, Lattice-QCD Expert*
- ◇ Anastasia Karavdina (Blue Yonder) - *How to get a 'real job' in Data Science*  
*PhD in Particle Physics (U. Mainz), Data Science Advisor and Mentor*
- ◇ Cynthia Keppel (Jefferson Lab) - *Career Opportunities from Fundamental Nuclear Physics to Patient Treatments*  
*PhD in Nuclear Physics (The American University), Founding member of Hampton University Proton Therapy Institute, Leader of exp. Halls A and C at Jefferson Lab*
- ◇ Silvia Niccolai (Irene Joliot-Curie Lab Orsay) - *Academic Position: EU and US*  
*PhD in Nuclear Physics (GWU), Research Director at IJCLab Orsay, Chair of the CLAS-Collaboration at Jefferson Lab*

## Other miscellaneous important information - I

- ◇ A panel discussion will be held with our invited speakers, on Sunday from 17:00 to 18:00!
- ◇ We take a Group Photo directly after the Discussion Panel, i.e. on Sunday at roughly 18:00.
- ↪ Workshop Dinner on Sunday, October 29th:
  - Pick up at Annabelle Hotel at 18:30 - 18:45,
  - Visit to the church of Agia Paraskevi in the Geroskipou Village,
  - Sightseeing in the historic center of Paphos,
- Dinner in the Old Port of Paphos.
  - ◇ We meet for the EINN2023 Welcome Reception on Monday, at 18:30 in the Hotel Lobby!

[Source: Wikipedia Commons]



## Other miscellaneous important information - II

- ◇ Please take part in the [Survey](#), held on [Monday from 17:00 to 17:10!](#)  
⇒ This will be a big help for organizers of future iterations of **F&C**.
- ◇ In case you haven't yet completed your onsite registration at the designated desk, please [do so at your earliest convenience!](#)  
⇒ Obtain [Vouchers for Lunches](#) [served at Mediterraneo Restaurant] (*No Voucher* needed for the Workshop Dinner on Sunday.)
- ◇ [Wi-Fi connection](#): please use either the [WiFi-password provided to you during the Conference Registration](#), or the [WiFi access-information associated with your room](#) here at the Annabelle Hotel.
- ◇ In case of an **emergency**, please contact:
  - Yannick Wunderlich (+49-...),
  - Nicolas Kantzilaris [EasyConferences] (+357-...),
  - Hotel Reception.
- ◇ Your talks will become [visible to the general public](#) once the Workshop has ended. In case you disagree with this, please tell us!

## One Final Request

We hope you will enjoy the Workshop  
at this beautiful Venue!