GHP Newsletter March 2024

American Physical Society Topical Group on Hadronic Physics

https://engage.aps.org/ghp/home

Executive Officers

Chair	*Chair-Elect*	*Vice-Chair*
William Brooks	Björn Schenke	Bernd Surrow

Past-Chair	*Secretary/Treasurer*
Julia Velkovska	Jamie Dunlop

Members at Large		*Early Career Member at Large*
Wouter Deconinck	Elena Long	William Imoehl

Contact information for the executive committee can be found at:
https://engage.aps.org/ghp/executive-committee.

Join GHP by following a link on our web page; namely, from:
https://engage.aps.org/ghp/home.

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1 Elections

The 2023 GHP election closed on 29 December. The winners were Bernd Surrow, Temple University, as Vice Chair, Wouter Deconinck, University of Manitoba, as Member-at-Large and William Imoehl, Carnegie Mellon, as Early Career Member-at-Large of the executive. We welcome them to the Executive Committee and thank the other candidates for their willingness to run. We also thank the Nominating Committee for providing an excellent slate of candidates for the election.

The 2023 Nominating Committee was:

Nominating Committee
David Gaskell (*Chair*)
Jozef Dudek | Olga Evdokimov | Derek Teaney | Rosi Reed

Elections will be held for four posts in the GHP Executive (Vice Chair, Member-at-Large, Student/Early Career Member, and Secretary/Treasurer) in 2024. Julia Velkovska (Past Chair), Elena Long (Member-at-Large), and William Imoehl (Early Career Member-at-Large) will have completed their terms, and Jamie Dunlop will have completed his first of two possible terms as Secretary/Treasurer. The Early Career Member has a one year term so the Executive will welcome a new member in this position every year.

We urge GHP members now to begin considering whom they would like to see filling the open positions in 2024 and encourage members with ideas to contact the *Chair of the Nominating Committee* and pass on their suggestions. There is strength in diversity and so the Executive would like to see nominations from across the entire spectrum of GHP's membership.

Our rules state that: *the Committee shall recommend to the Executive Committee for approval at least two candidates for each open position; the slate of candidates will be balanced as much as possible to ensure demographic diversity and wide representation amongst the various fields of physics included in the GHP's membership; the Nominating Committee shall be chaired by the immediate Past Chair.*

In 2024, the Chair of the Nominating Committee will be

Julia Velkovska

and shall include four members in addition to its Chair, one of whom shall be appointed by the APS.

Attracting and serving a diverse and inclusive membership worldwide is a primary goal for APS. In calling for nominations, we wish to remind you how important it is to give full consideration to qualified women, members of underrepresented minority groups, and scientists from outside the United States.

In addition, as now stated on the GHP Executive Committee page, nominees and award and office holders are expected to meet standards of professional conduct and integrity as described in the APS Ethics Guidelines https://www.aps.org/policy/statements/19_1.cfm. Violations of these standards may disqualify people from consideration or lead to revocation of honors or removal from office.

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2 Membership

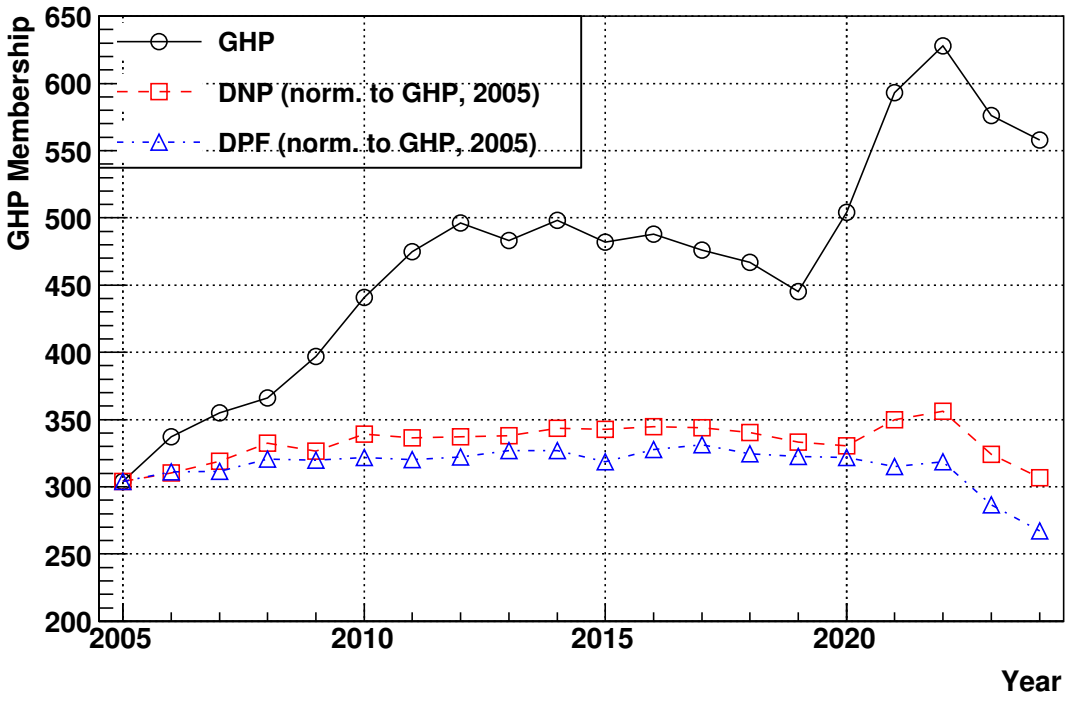

Figure 1: Solid line – GHP membership, absolute value, with "2024" representing the APS Official Count at the beginning of 2024; dashed – DNP membership normalized to GHP's value in 2005 (2559 $\longrightarrow$ 304); and dot-dashed – DPF membership normalized to GHP's 2005 value (3100 $\longrightarrow$ 304).

The GHP membership, after declining for five years, increased to 504 members at the start of 2020, thanks to dedicated efforts of the Executive Committee in 2019. There was significant growth from 2020 through 2022 and the GHP begins this year with 558 members, 11% down from its peak of 628 in 2022. Other units have seen similar reductions. Given the large User Groups associated with RHIC, Jefferson Lab, Fermilab, EIC, and more, we hope for continued growth in the future. If any members are interested in assisting the Executive Committee in its efforts, please circulate this newsletter to your colleagues and students working in hadron physics and explain the benefits of becoming a member of the GHP, such as our Dissertation Award, Fellowships, and Workshops detailed below. Current APS members can add units to their membership online by following a link on the GHP web page https://engage.aps.org/ghp/home.

The GHP is also the only Topical Group that currently has a Dissertation Award for outstanding students in hadron physics. We are one of the few Topical Groups holding a biennial meeting, which is very well attended by the broad hadronic physics community. To ensure that the significant impact of GHP continues, it is crucial to sustain and grow our GHP membership.

Unit membership is now \$10, of which the GHP receives \$5 from the APS. The remainder stays with the APS and covers the many services they provide. The APS has also provided additional support to the GHP, *e.g.*, the last five GHP meetings have been co-located with the

APS April meeting which results in substantial savings. With this support we can be an active force for hadron physics. GHP membership fees are used to assist with expenses such as travel for the winner of the GHP Dissertation Award see Sec. 4; the organization of meetings such as the forthcoming GHP 2025 biennial meeting; the preparation and publication of manuscripts that support and promote the GHP's activities; and participation in those fora that affect and decide the direction of basic research.

If a Topical Group has a membership of 3% or more of the APS members, it can apply to become a Division. The Soft Matter Topical Group transitioned to Division status in 2019, after only 4 years. There are currently fourteen Topical Groups, with the newest Topical Group, on Quantum Materials Synthesis, established in 2024. GHP is eighth in size this year and at 1.2% of APS membership. Of the Divisions, Nuclear Physics and Particles & Fields have most overlap with the GHP membership. We typically share invited session sponsorship with DNP at the April meeting but have also partnered with the Divisions of Astrophysics and Computational Physics in invited sessions.

Of our members, 67% are regular or senior members while 28% are in the student or early career category. (Lifetime members, which exist at all levels aside from students, make up 5% of the membership.) In terms of gender diversity, based on those who specified a gender identity, 15.3% of members identify as female while 0.9% identify as non-binary.

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3 Fellowship

In 2023 two people nominated by GHP were elected as APS Fellows. They were:

- **Alexandre Deur**, Thomas Jefferson National Accelerator Facility,
  "For scientific leadership of experimental studies of nucleon spin structure in the strong QCD regime."
- **Andreas Metz**, Temple University,
  "For contributions toward a better understanding of the partonic and chiral structure of hadrons and nuclei and the manifestations thereof in dedicated inclusive and exclusive high-energy scattering processes.'

The Executive Committee would like to remind the GHP membership that each year the APS allocates a number of Fellowship Nominations to a Topical Group. That number is based primarily on membership. The rubric excludes student members and current Fellows in the membership count to obtain eligible members. We are allocated TWO Regular nominations for 2024.

The instructions for nomination may be found at
http://www.aps.org/programs/honors/fellowships/nominations.cfm
The entire process is now online.

Note that one does not have to be a Fellow to nominate a colleague for Fellowship.

A few things to know before proceeding, however. One must:

- Ensure the nominee is a member of the Society in good standing as well as a member of GHP. The online site will do this for you but it's best to check beforehand, to save yourself time or get your nominee to join APS and GHP.

- A nomination requires a sponsor and a co-sponsor. During the online nomination process, you will be required to provide details for a co-sponsor. After you complete a nomination, the co-sponsor will be notified by EMail. It would be best to coordinate with the co-sponsor beforehand.
- In addition to the nomination letters, you will require supporting letters, that will need to be uploaded to the APS web site. Two letters of support are sufficient. Individuals providing letters of support do not have to be members of the APS, however the sponsor and co-sponsor should be APS members.
- The nomination process should be complete prior to GHP's deadline:

Monday 3rd June 2024

The APS will subsequently forward the nominations to the GHP Fellowship Committee, chaired by the GHP Vice-Chair, Bernd Surrow.

The Executive urges members of GHP to nominate colleagues who have made advances in knowledge through original research and publication or made significant and innovative contributions in the application of physics to science and technology. They may also have made significant contributions to the teaching of physics or service and participation in the activities of the Society. The diversity of the Fellow candidates should reflect the GHP as a whole, both in terms of gender and in terms of physics interests.

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4 Dissertation Award

The 2024 recipient of the Dissertation Award in Hadronic Physics is

- **Blair Seidlitz**, University of Colorado Boulder,
  "For developing the experimental access of high-multiplicity photo-nuclear interactions and a novel investigation of collective phenomena in this system.".

This award recognizes outstanding early-career scientists who have performed original research in the area of hadronic physics.

The APS Topical Group on Hadronic Physics presents the award **annually**, consisting of $1 500, a certificate, up to $1 500 in travel reimbursement, and a registration waiver to receive the award and give an invited talk at the biennial meeting of the Topical Group on Hadronic Physics.

This award was established in 2011 with support from Jefferson Science Associates, LLC (the management contractor for Jefferson Lab), Brookhaven National Laboratory, Universities Research Association (the management contractor for Fermi National Accelerator Lab), and the members and friends of the Topical Group on Hadronic Physics. The award was permanently endowed in 2021 with the support of the Center for Frontiers in Nuclear Science and additional support from the friends of this Topical Group.

Following the current GHP bylaws, the Dissertation Award committee for the 2025 award will comprise

and four other members appointed by the Chair, with the approval of the Executive Committee. More information on the nomination deadline and the committee for the 2025 Award will be forthcoming.

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5 GHP Program at the APS April Meeting, 2024

https://april.aps.org

GHP is allocated two invited sessions at the April meeting. We often organize joint sessions with other units, in order to raise our profile by increasing the number of sessions sponsored by the GHP. (The maximum currently possible via this method is four.)

The program committee for the 2024 APS April meeting is

GHP Program Committee
William Brooks (*Chair*)
Cynthia Keppel Ramona Vogt

The Program Committee has prepared an excellent program for the April 2024 meeting. There will be four GHP sponsored Invited Sessions and three GHP sponsored Mini-Symposia (all of which are co-sponsored with GHP). There is also a Business Meeting on Thursday April 4 at 7 pm at which we have invited the funding agencies and national labs to present. In addition to the invited sessions and mini-symposia, GHP has seven contributed sessions, five of which are in person and two of which are virtual only.

The GHP invited and contributed program is listed here. Note that the meeting time zone will be Pacific Daylight Time, PDT.

5.1 GHP invited

The New Puzzle of Proton Color Transparency at Small Distance Scales
Session C08, Wednesday 3 April 1:30-3:18 PM (Joint with DNP)

Advances in Ultraperipheral Collisions
Session D12, Wednesday 3 April 3:45 PM - 5:33 PM (Joint with DNP)

Elucidating Nuclear Structure in Heavy-Ion Collisions
Session G08, Thursday 4 April 10:45 AM-12:33 PM (Joint with DNP)

Experimental Explorations of Diquark Correlations in Baryons
Session R12, Saturday 6 April 10:45 AM-12:33 PM (Joint with DNP)

Mini-Symposium: Novel Experimental Results in Nucleon-Nucleon Short Range Correlations I
Session D17, Wednesday 3 April 3:45-5:33 PM (Joint with DNP)

Mini-Symposium: Novel Experimental Results in Nucleon-Nucleon Short Range Correlations II
Session J17, Thursday 4 April 3:45 PM-5:33 PM (Joint with DNP)

Mini-Symposium: New Results for Quark Propagation in Cold Matter, and Potential Connections to Diquarks in Hadrons
Session P03, Friday 5 April 3:45 PM-5:33 PM (Joint with DNP)

GHP Business Meeting
Session J22, Thursday 4 April 7:00 PM

5.2 GHP contributed sessions, in person

Nucleon Structure and Nucleon Spin I
Session D08, Wednesday 3 April 3:45-5:21 PM (Joint with DNP)

Light Mesons and Baryons
Session M08, Friday 5 April 1:30 PM-3:06 PM (Joint with DNP)

Heavy Ions II
Session P15, Friday 5 April 3:45 PM-5:09 PM (Joint with DNP)

Hadron Spectroscopy and Exotics I
Session S03, Saturday 6 April 1:30 PM-2:42 PM

Nucleon Structure and Nucleon Spin II
Session T04, Saturday 6 April 3:45 PM-5:21 PM (Joint with DNP)

5.3 GHP contributed sessions, virtual

Electromagnetic Interactions
Session CC02, Wednesday 3 April 11:00-12:24 (Joint with DNP)

Nuclear Theory
Session GG02, Friday 5 April 11:00 AM-12:48 PM (Joint with DNP)

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6 Contributed Reports

NB. We would be pleased to receive input from GHP membership, in particular from people at labs with hadron physics programs who are willing to prepare input and clear it with their lab's leadership. The following contribution should serve as a template.

6.1 News from Jefferson Lab Nuclear Physics

(Communicated by Thia Keppel and Douglas Higinbotham)
Jefferson Lab's CEBAF accelerator stopped for a scheduled accelerator down in March of 2023. This down was a bit longer than originally planned for a facility-wide review of safety documentation and procedures to ensure a safe working environment. Beam operations resumed in September of 2023, and a number of experiments have been carried out in the lab's experimental halls since then:

In Experimental Hall A, the high four-momentum transfer measurement of the neutron's electric form factor was completed. This experiment made use of the most recent-generation polarized 3He target from the University of Virginia, Jefferson Lab, and the College of William and Mary. This 60 cm long target achieved polarizations greater than 50% in beam to clock the highest experiment figure of merit for such a target to date. Hall A is now getting ready to measure the same form factor making use of a recoil polarimetry technique. The use of multiple measurement techniques ensures that nuclear effects, since the neutrons are bound in nuclear targets, are being correctly taken into account.

In Experimental Hall B, the Run Group B suite of experiments was successfully completed. These experiments studied color transparency and transverse momentum distribution effects in the nuclear medium over a wide range of four-momentum transfers in carbon, iron and tin. In addition, Run Group K has run with an LH2 target to measure DVCS and nucleon resonances with 6.6 and 8.8 GeV electron beams. Starting in mid-March, Run Group E will be making use of the 11 GeV electron beam and a series of nuclear targets to study quark propagation in nuclear matter.

In Experimental Hall C, the first experiments to make use of the new Neutral Particle Spectrometer (NPS) are underway. This group of experiments includes a variety of production methods and measurements, including exclusive deeply virtual Compton scattering, neutral pion cross-section measurements, and semi-inclusive pi0 production.

In Experimental Hall D, a tremendous effort has been underway to upgrade the forward calorimeter in preparation for the GlueX-II and the JLab Eta Factory (JEF) experiments. In addition, the CEBAF accelerator sent Hall D a week of test beam in March 2024 so that they could ensure that their equipment, new and old, would be ready for the full run after the 2024 scheduled accelerator down.

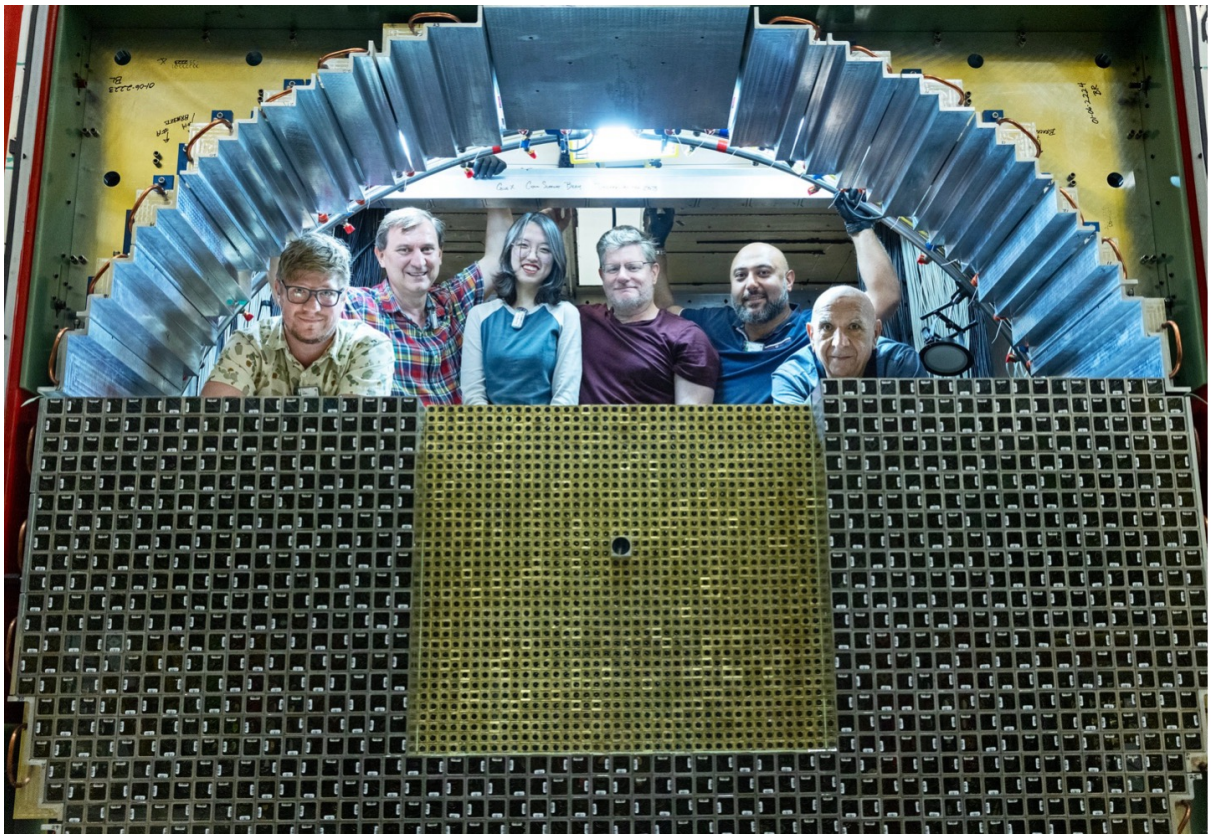

Figure 2: From left: Vladimir Berdnikov, Alexander "Sasha" Somov, Aoran Liu, Simon Taylor, Arshak Asaturyan, and Hakob Voskanyan pose for a group photo within the partially completed upgrade of the Hall D GlueX forward calorimeter (FCal2) taken on September 5, 2023

6.2 RHIC Run 24

(Communicated by Jamie Dunlop)
As I'm writing this winter has finished, and it is starting to warm up on Long Island. But the RHIC cryo plant is going the other way, beginning the cool down to 45K in preparation for the 2024 RHIC run that will begin in earnest in mid-April. This will be an important run, with the last planned collisions worldwide of two beams of polarized protons for the foreseeable future, and the first physics run with a commissioned sPHENIX detector.

But first, 2023. This was the first run with a fully installed sPHENIX experiment, and therefore a large fraction of the run was expected to be devoted to sPHENIX's commissioning. It was also the first long Au+Au run at $\sqrt{s_{NN}}$=200 GeV since 2016, and so the first chance for STAR to take such data with its substantially upgraded detector configuration, which allows for events to be taken faster and covering a much larger angular range. Unfortunately, the run ended early, on August 1, after an issue developed in one of the RHIC magnets. In the shortened run, STAR collected more than 3 times the minimum bias dataset it had taken in 2016 and sPHENIX made major progress in commissioning its newly installed detector.

The RHIC magnet has now been replaced, along with some modifications to the complex to address lessons learned. sPHENIX spent the shutdown making modifications to increase its operational efficiency. With these changes in place, RHIC is ready to return to operations on April 15.

This year's run will focus on the collision of polarized protons at $\sqrt{s}$= 200 GeV, which have a dual role, providing unique data to understand the spin structure of the proton and also the all-important baseline from which to observe deviations in Au+Au collisions. It will have the first polarized proton collisions seen by sPHENIX and the first at $\sqrt{s}$=200 GeV seen by the STAR Forward Upgrade. It is also planned to be the last such dataset from the collision of two beams of polarized protons. This polarized proton dataset, combined with the large dataset from 2022 of polarized proton collisions at $\sqrt{s}$=500 GeV and earlier such datasets with different configurations of STAR and PHENIX, will be a rich source of analysis for years to come, especially in combination with and in comparison to future measurements at the Electron Ion Collider.

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7 Forthcoming Hadron Physics Meetings

Meetings of interest to GHP's membership are listed on:
https://sites.google.com/lbl.gov/hadronic-physics-conferences/home. If there is a meeting you feel should be included, please send the appropriate information to Shujie Lie (shujielie@lbl.gov) or John Arrington (jarrington@lbl.gov).

This GHP Newsletter was edited by Jamie Dunlop for the Executive Committee.