

Executive Officers

<i>Chair</i>	<i>Chair-Elect</i>	<i>Vice-Chair</i>	
Garth Huber huberg@uregina.ca	Ian Cloët icloet@anl.gov	Dave Gaskell gaskell@jlab.org	
<i>Past-Chair</i>	<i>Secretary/Treasurer</i>	<i>Members at Large</i>	
David Richards dgr@jlab.org	Ramona Vogt rlvogt@lbl.gov	Tim Hobbs tjhobbs@mail.smu.edu	Phiala Shanahan phiala@mit.edu

NB. EMail addressed to ghpexecutive@anl.gov will reach all members of the Executive.

Join GHP by following a link on the lower-right of our web page; namely, from:
<http://www.aps.org/units/ghp/>.

Contents

1 Elections	2
2 Fellowship	2
3 Dissertation Award	3
3.1 Anonymous Donor to Match Contributions to the Dissertation Award	4
4 GHP Program at the 2021 APS April Meeting	4
5 GHP 2021: 9th Workshop of the GHP	5
6 APS Files FOIA Request in Response to Revocation of Visas for Chinese Students	7
7 Meeting Summaries	9
7.1 INT Program 20-1c	9
7.2 Hard Probes 2020	10
7.3 Pion and Kaon Structure Functions at the EIC	11
7.4 LaMET 2020 Summary	12
8 Forthcoming Hadron Physics Meetings	13

1 Elections

Elections will open soon for three positions in the GHP Executive (Vice-Chair, Member-at-Large and Student/Early Career Member-at-Large) in 2020. David Richards (Past Chair) and Tim Hobbs (Member-at-Large) will have completed their terms. This year we will elect our first Student/Early Career Member-at-Large, as required in the updated bylaws approved by our members in the special election completed in May.

Our rules state that: *the Committee shall nominate at least two candidates for the offices of Vice-Chair and for the open position of Member-at-Large; the slate of candidates will be balanced as much as possible to ensure 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 and shall include four members in addition to its Chair, one of whom shall be appointed by the APS.*

Nominating Committee

David Richards (*Chair*)

dgr@jlab.org

James Dunlop dunlop@bnl.gov	Barbara Pasquini barbara.pasquini@unipv.it	Matthew Shepherd mashephe@indiana.edu	Ivan Vitev ivitev@lanl.gov
---	---	---	---

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. There is strength in diversity and so the Executive would like to see nominations from across the entire spectrum of GHP's membership.

2 Fellowship

The GHP Fellowship Committee, chaired by GHP Vice-Chair Dave Gaskell, that handled the nominations was:

	Fellowship Committee	
	Dave Gaskell (<i>Chair</i>) gaskelld@jlab.org	
Renee Fatemi renee.fatemi@uky.edu	Daniel Phillips phillid1@ohio.edu	W. Mike Snow wsnow@indiana.edu

We remind the GHP that each year the APS allocates a number of Fellowship Nominations to a Topical Group. That number is based primarily on membership. Since we are in the neighborhood of 500 members, we are allocated TWO Regular nominations.

In 2020, two GHP members became APS Fellows through GHP. They are Barbara Pasquini and David Richards.

Barbara's citation is:

“For important work developing and improving theoretical tools, including dispersion relations, light-front models, and Wigner distributions which increase the sensitivity of both low- and high-energy experiments such as Compton scatter and tomography, to the fundamental structure of hadrons.”

David’s citation reads:

“For seminal contributions to the understanding of hadron properties in lattice quantum chromodynamics, especially in the areas of hadron spectroscopy and hadron structure.”



Figure 1: (Left) Barbara Pasquini (Right) David Richards

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

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. We also note that maintaining a diversity in our Fellows can broaden the impact of the GHP.

3 Dissertation Award

The GHP Dissertation Award was established in February 2012, thanks to significant contributions from Brookhaven Science Associates (the management contractor for the Brookhaven National Laboratory), Jefferson Science Associates, LLC (the management contractor for Jefferson Lab), Universities Research Association (the management contractor for Fermi National Accelerator Lab) and personal contributions from some of our members.

The current Award is a \$ 1500 stipend and a travel allowance of up to \$ 1500 to attend the GHP Meeting to receive the Award. The winner is invited to deliver a plenary presentation at the Biennial GHP Meeting. Garth Huber is Chair of the Dissertation Award Committee. The members are:

Dissertation Award Committee

Garth Huber (*Chair*)
huberg@uregina.ca

Nilanga Liyanage nl8n@virginia.edu	Julia Velkovska julia.velkovska@vanderbilt.edu
Alexei Bazavov bazavov@msu.edu	Carl Carlson carlson@jlab.org

The submissions are judged according to the following criteria: quality of written dissertation (40%), contribution of student to research (30%), impact of work (20%), and broader involvement of student in the community (10%).

3.1 Anonymous Donor to Match Contributions to the Dissertation Award

Following the new guidance from APS (see the discussion in the November 2018 newsletter at <https://www.aps.org/units/ghp/newsletters/upload/November18.pdf> for why the guidance changed) we have increased the award for 2021 to \$1,500. We have been actively seeking the funding necessary to maintain our award at the new level.

We need to raise somewhat more than \$7,000 to continue presenting the award on a biennial basis. While we would rather raise sufficient funds to present the award annually to honor more of the outstanding students who have been nominated, an additional \$22,500 is required to reach that goal.

To help us meet the intermediate goal of endowing a biennial award, an anonymous donor has come forward and agreed to match member donations by 31 December 2020, up to \$3,500. Please consider GHP in your end of year donations, for example, on Giving Tuesday, 1 December this year.

It is easy to do, you can click on the link below in the online version of the newsletter to go directly to the GHP Dissertation Award donation page to make a donation using a credit card,

<https://my.aps.org/donatenow?pid=a1Bf400000Cp7zAEAR>

If you would prefer not to donate online by credit card, please contact Mariam Y. Mehter, APS Campaign and Donor Relations Manager at mehter@aps.org for alternate contribution options. Mariam will be directly contacting members shortly to provide the donation information.

As always, we are grateful for your interest and support!

4 GHP Program at the 2021 APS April Meeting

The APS has decided to hold the 2021 April meeting virtually. The meeting will be online during 17-20 April. See

<https://april.aps.org>

for details and abstract submission. The abstract submission deadline for the April meeting is 8 January 2021.

GHP participates in the annual APS April Meeting, which is also the primary meeting of the unit in even years. Roughly 100 of our members attend the APS April meeting each year.

GHP is allocated two invited sessions at the April meetings. 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 is four.)

The Program Committee for the 2021 APS April meeting is

GHP Program Committee

Ian Clöet (*Chair*)

icloet@anl.gov

Lamiaa El Fassi	Matthew Sievert	Richard Trotta
le334@msstate.edu	sievertmd@gmail.com	trotta@cua.edu

Dave Gaskell	Ramona Vogt
gaskelld@jlab.org	rlvogt@lbl.gov

In addition to the invited sessions, we suggest that GHP members who do submit abstracts to the April meeting consider submitting their abstracts to the GHP sorting categories:

E01 Hadronic Physics: General

E02 Light Mesons and Baryons

E03 Heavy Flavor Hadrons

E04 Hadron Spectroscopy and Exotics

E05 Nucleon Structure and Nucleon Spin

E06 QCD and Short Range Effects in Nuclei

E07 Partonic Structure of Nuclei

E08 Mini-Symposium: Early Science Results from Jefferson Lab 12 GeV Results

E09 Mini-Symposium: Results from RHIC Beam Energy Scan II

Some of the sorting categories have again been updated. Note also that this year we are organizing two mini-symposia and welcome submissions to these categories. There will be two invited sessions to go with the mini-symposia.

The full complement of GHP-sponsored sessions, as well as other sessions of interest to our members will be detailed in the March 2021 edition of the newsletter.

5 GHP 2021: 9th Workshop of the GHP

The Ninth Workshop of the APS Topical Group on Hadron Physics will be held the four days immediately before the April APS meeting.

13-16 April 2021

The meeting will also be virtual, the same as the April meeting. The meeting website can be found at <https://www.jlab.org/indico/event/412> while email inquiries can be made to ghp2021@anl.gov.

The Program Committee is chaired by Ian Clöet and Dave Gaskell, the GHP Chair-Elect and Vice Chair respectively. The remainder of the Program Committee includes members of the GHP executive and other GHP members. We have enlarged the Program Committee to include graduate students and other early career members. The full Program Committee is:

- Fatma Aslan (Jlab) fpaslan@jlab.org
- Vincent Cheung (UC Davis) hscheung@ucdavis.edu
- Ian Clöet (ANL, co-chair) icloet@anl.gov

GHP21
Ninth Workshop of the APS
Topical Group on Hadronic Physics
April 13-16

TOPICS :

- Electroweak probes
- Extreme matter and neutron star collisions
- Hadrons in nuclei
- Hadron spectroscopy
- Heavy flavor and jet production
- Neutrino-hadron interactions
- New physics and discrete symmetry violation in hadron physics
- Nonequilibrium dynamics
- Nucleon and nuclear spin physics
- Physics of the quark-gluon plasma
- Quantum information for hadron physics
- Small systems and collectivity
- Transverse and longitudinal structure of hadrons
- Ultrapерipheral collisions

Organizing Committee:

• Fatma Aslan (JLab)	• Dennis Perepelitsa (Boulder)
• Vincent Cheung (UC Davis)	• David Richards (JLab)
• Ian Cloet (ANL, co-chair)	• Susan Schadmand (Jülich)
• Lamiaa El Fassi (Mississippi State)	• Bjoern Schenke (BNL)
• Oleg Eyser (BNL)	• Ralf Seidl (RIKEN)
• Susan Gardner (Kentucky)	• Phiala Shanahan (MIT)
• Dave Gaskell (JLab, co-chair)	• Matthew Sievert (NMSU)
• Timothy Hobbs (SMU)	• Mike Strickland (Kent State)
• Garth Huber (Regina)	• Richard Trotta (CUA)
• Sookhyun Lee (Michigan)	• Ramona Vogt (LLNL & UC Davis)
• Amy Nicholson (North Carolina)	

Workshop website: <https://www.jlab.org/indico/event/412>
Workshop email: ghp2021@anl.gov

By Andre m - Own work, CC BY-SA 3.0, <https://commons.wikimedia.org/w/index.php?curid=71775546>

- Lamiaa El Fassi (Mississippi State) le334@msstate.edu
- Oleg Eyser (BNL) keyser@bnl.gov
- Susan Gardner (U Kentucky) svg@pa.uky.edu
- Dave Gaskell (JLab, co-chair) gaskell@jlab.org
- Tim Hobbs (SMU) tjhobbs@mail.smu.edu
- Garth Huber (U Regina) huberg@uregina.ca
- Sookhyun Lee (U Michigan) sookhyun@umich.edu
- Amy Nicholson (U North Carolina) annichol@email.unc.edu
- Dennis Perepelitsa (Boulder) Dennis.Perepelitsa@colorado.edu
- David Richards (JLab) dgr@jlab.org
- Susan Schadmand (Jülich) s.schadmand@juelich.de
- Bjoern Schenke (BNL) bschenke@bnl.gov
- Ralf Seidl (RIKEN) seidl@bnl.gov
- Phiala Shanahan (MIT) phiala@mit.edu
- Matthew Sievert (NMSU) sievertmd@gmail.com
- Michael Strickland (Kent State) mstrick6@kent.edu
- Richard Trotta (CUA) trotta@cua.edu
- Ramona Vogt (LLNL and UC Davis) rlvogt@lbl.gov

The topics covered include:

- Electroweak probes
- Extreme matter and neutron star collisions
- Hadrons in nuclei
- Hadron spectroscopy
- Hadron tomography and hadronization
- Heavy flavor and jet production
- Neutrino-hadron interactions
- New physics and discrete symmetry violation in hadron physics
- Nonequilibrium dynamics
- Nucleon and nuclear spin physics
- Physics of the quark-gluon plasma
- Quantum information for hadron physics
- Small systems and collectivity
- Transverse and longitudinal structure of hadrons
- Ultrapерipheral Collisions

Plenary speakers will include the GHP Fellows from the last two years: Daniel Boer, Barbara Pasquini, and David Richards as well as the 2021 Dissertation Award Winner.

Abstract submission is open. The abstract submission deadline is **15 January 2021** while the early registration deadline is **26 March 2021**.

6 APS Files FOIA Request in Response to Revocation of Visas for Chinese Students

(Communicated by Tawanda W. Johnson, APS Press Secretary tjohnson@aps.org. This story appeared as APS News update on 16 October, <https://www.aps.org/publications/apsnews/updates/foia.cfm>)

In its ongoing battle to ensure that international students and scholars can study and work in the US, APS has filed a Freedom of Information Act (FOIA) request with the US State Department, asking for the rationale behind the revocation of more than 1,000 visas impacting Chinese students identified in comments from Department of Homeland Security officials.

The action stems from a May 29, 2020 proclamation from the Trump Administration that blocks Chinese graduate students, post-docs, and visiting researchers affiliated with China’s “military-civil fusion strategy” from entering the US on an F or J visa. The premise of that proclamation: China is using students as a means to illegally acquire intellectual property from the US to strengthen its military capability.

According to the US State Department, “the F-1 visa is for students attending a full-time degree or academic program at a school, college or university. The F-1 visa is valid for as long as it takes the student to finish his or her course of study.” The State Department also notes, “the J-1 visa...enable(s) foreign nationals to come to the U.S. to teach, study, conduct

research, demonstrate special skills or receive on the job training for periods ranging from a few weeks to several years.”

Regarding the FOIA request, APS leadership engaged in numerous conversations with officials in the State Department, the White House National Security Council, and various science agencies to discuss the proclamation and what information the Trump Administration used in issuing it. None of the administration officials could or were willing to provide any details, such as: an example of a case of student espionage involving university basic research; the number of students the administration claims have engaged in or are charged with espionage; or, an estimate of the impact to the US of the alleged espionage that would form the basis for the proclamation.

APS does not have legal standing to challenge the proclamation. So, having exhausted all other means of responding to the proclamation, the only avenue left to the Society was to file the FOIA request. The goal is to gather information that led to the proclamation, evaluate it, and then depending upon the results, work with universities and industry to mount a legal challenge if necessary.

“APS is extremely concerned that the revocation of these visas will negatively impact the United States as a destination of choice for highly skilled, talented international students. At a time when our global counterparts are stepping up their recruitment of these students, the US should be working even harder to both attract them to and keep them in America, ensuring that they can help keep our nation on a path of cutting-edge research, robust innovation, and job creation,” said APS President Phil Bucksbaum.

Dated Sept. 28, 2020, the FOIA request states, “The APS urgently seeks information to bring transparency to this action so that it, its members, international students, and the public more generally can understand how the Proclamation is being applied by the Administration. As the primary US professional association for physics, the APS and its members have a significant interest in ensuring mobility across national borders of the scientific community. Scientific mobility enables broad participation in global scientific collaborations, and it ensures the United States remains the destination of choice for talented scientists who contribute to US competitiveness and innovation.”

The FOIA request further notes, “While the APS recognizes a national security threat posed by the Chinese Governments efforts to acquire technology and intellectual property from the United States, the APS is concerned that the Proclamation is over broad and may be applied to exclude innocent persons who would otherwise make significant contributions to the US scientific enterprise.”

Francis Slakey, Chief External Affairs Officer for APS, said the Society wants international students to know that they are not alone in this challenge.

“We are working hard on behalf of our members, and we want them to understand that we are doing everything in our power to fight these recent actions by the Trump Administration all of which send the wrong message that international students are not welcomed in the US,” he said.

During the past several months, APS leaders, staff, and members have diligently worked to push back against Executive Branch actions that harm international students who are essential to the physics community and vital to the US scientific enterprise.

If APS receives a response from the State Department concerning the FOIA request, the information will be used “to evaluate and respond to any additional harm that the

Proclamation and related executive action is having on declining U.S. scientific competitiveness and the countrys ability to engage in global scientific collaboration,” according to the FOIA request.

The document further states, “Lacking any public explanation, the denial of visas will only contribute to the growing view that the United States is unwelcoming to foreigners and thereby diminish the ability of the United States to attract top talent, as the APS has seen in its annual survey of international students.”

7 Meeting Summaries

NB. We would be pleased to receive summaries from GHP membership of meetings that they have organized or attended. Please send the summaries to the GHP Secretary-Treasurer.

7.1 INT Program 20-1c on Chirality and Criticality: Novel Phenomena in Heavy-Ion Collisions

(Communicated by Jinfeng Liao liaoji@indiana.edu, Mikhail Stephanov misha@uic.edu, Zhangbu Xu xzb@bnl.gov, and Ho-Ung Yee [hjye@uic.edu](mailto:hjee@uic.edu))

This INT program was organized by Jinfeng Liao (Indiana Univ), Mikhail Stephanov (UIC), Zhangbu Xu (BNL) and Ho-Ung Yee (UIC), in an online virtual format from May 11 22, 2020. The program was originally planned as a usual 4-week in-person program, which became impossible due to the COVID-19 outbreak that upended many things. Working together with the INT director and staff, the organizers decided to run an online virtual program (perhaps the first of its kind) and to keep the community connected in these trying times.

The scientific goal of the program was to bring together theorists and experimentalists worldwide to discuss a number of novel phenomena in heavy ion collisions that have triggered enthusiastic efforts of investigation and become trending topics lately. One of them concerns the physics of chirality in QCD that can be manifested through the anomalous transport processes such as the Chiral Magnetic Effect (CME). Another example is related to the long-sought-after critical end point (CEP) on the QCD phase diagram. Furthermore, there has been significant interest in understanding properties of QCD matter under new extreme conditions such as strong magnetic fields and fluid vorticities, with notable progress in the study of global spin polarization in heavy ion collisions. Very active experimental efforts have been ongoing to search for these phenomena in the laboratory, including the isobaric collision experiment to search for CMEs as well as the Beam Energy Scan II (BES II) experiment to search for the CEP.

The 2-week virtual program hosted a total of 33 speakers (15 in the first week and 18 in the second), who gave talks covering a diverse range of recent progress with many new theoretical and experimental results. The topics covered by these presentations and the vibrant discussions during the program included:

- the QCD critical point and its experimental search; Real-time dynamics of critical fluctuations in and off equilibrium; and sensitivities and limitations of experimental observables.

- Chiral transport phenomena and isobar collisions; topology of QCD at finite temperature and density; magneto-hydrodynamics; chiral kinetic theory; and implications for astrophysics and condensed matter physics of Dirac/Weyl semi-metals.
- Quantum many-body phenomena due to spin polarization; QCD plasmas with strong vorticities and/or magnetic fields; hydrodynamics with quantum spins; and global and local polarization measurements at RHIC and LHC.
- Realistic heavy-ion simulations including effects of chirality and criticality.
- Lattice QCD study of the equation of state at finite density and topological fluctuations.

The program schedule was optimized to accommodate both domestic and international participants from a wide span of time zones by having two separate sessions in the morning and in the late afternoon. This online gathering enjoyed an enthusiastic audience, with head counts typically reaching 100-150 (morning session) and 70-90 (afternoon session). The recorded talks were visited typically about 250-300 times. The discussion sessions in the morning were quite vigorous and often continued well beyond the scheduled time. Overall it was a successful event that engaged a global community of physicists, generated fruitful intellectual interactions, as well as nurtured future scientific developments and collaborations.

7.2 10th International Conference on Hard and Electromagnetic Probes of High-Energy Nuclear Collisions (Hard Probes 2020)

(Communicated by R. Fries (rjfries@comp.tamu.edu), F. Geurts (geurts@rice.edu), Christina Markert (cmarkert@physics.utexas.edu), and Claudia Ratti (cratti@uh.edu))

The 10th Hard Probes Conference took place June 1-5, 2020, with a student day preceding the conference on May 31. Hard Probes is one of the largest conferences in high energy nuclear physics, focusing on electroweak probes, jets and high-momentum hadrons, heavy flavor probes, quarkonia, and initial state physics in ultra-relativistic nucleus-nucleus collisions and related systems. It was one of the first large conferences to be affected by the COVID-19 crisis with enough time to spare to successfully convert the full conference schedule to an online format. Austin, TX had originally been chosen as the location for the conference and preparations were proceeding smoothly until early spring. By mid-March it had become clear that an in-person conference was no longer feasible. A decision was made to move the entire conference to Zoom, keeping the original dates.

The first condition for a successful online conference was the acquisition of a sufficient number of Zoom licenses with technical support which was both graciously provided by CERN. A session format was designed with two lead persons per session, a session manager and a session chair, which allowed a separation of technical and scientific aspects of the session. Detailed manuals for chairs, managers and speakers as well as training sessions for session managers were devised. The poster session was organized with one Zoom room per poster. All rooms could be accessed easily from a hub on the conference Indico website. Poster presenters were allowed to upload a 3-minute teaser video before the session, leading to a surprisingly creative array of videos!

The conference ran very smoothly although, undoubtedly, many participants missed the in-person interactions, the chats in the coffee breaks, and interactions with colleagues over lunches or dinners. What has become almost a routine by now was still an unusual experience

in early June. However, we also note several positive aspects of the online format. Participation more than doubled and participants generally seemed to be more diverse than in previous in-person conferences of this series. While the original plans anticipated about 250 participants in Austin, more than 700 signed up for the online conference, and more than 400 regularly participated in the plenary sessions. The student day reached an unprecedented number of students and was attended by more than 200 participants. Clearly, the fact that the conference fee could be waived and no travel was necessary encouraged participation from around the globe, in particular participation of colleagues and students from institutions with financial issues or travel restrictions. It also made it easier for the organizers to reach their goal of a diverse conference in terms of gender and geographical representation (e.g. 40% of the plenary speakers and 36% of the plenary chairs were women).

Scientifically, Hard Probes 2020 featured a number of new results in heavy-ion physics from the experimental collaborations at both RHIC and LHC as well as new insights from a diverse field of theory contributions. The online format was optimized to allow, over a period of 5 days, participation across many time zones with daily plenary and parallel sessions. In total 37 plenary, 152 parallel, and 67 poster presentations were scheduled. The final day of the conference highlighted upgrades at both RHIC and LHC, the new Electron Ion Collider at BNL, and future plans at CERN, including an FCC. The last sessions also allowed a spotlight to shine on the next generation of Hard Probes scientists who presented a summary of their award-winning posters in 8 flash talks. The conference website and all the presentations may be found at <https://indico.cern.ch/event/751767/>.

The organizers of Hard Probes 2020 would like to thank the many session managers and chairs, and gratefully acknowledge the wonderful support from CERN, CERN IT and their home institutions. Without their tireless work and support it would not have been possible to switch an entire conference into a viable online format within a few weeks. The community is now looking forward to the 11th Hard Probes conference in Aschaffenburg, Germany in 2022.

7.3 Pion and Kaon Structure Functions at the EIC

(Communicated by T. Horn (hornt@cua.edu) and R. Ent (ent@jlab.org))

The workshop, Pion and Kaon Structure Functions at the EIC, organized by the Center for Frontiers in Nuclear Science (CFNS), was held 2-5 June 2020. The main organizers were Tanja Horn (CUA) and Craig Roberts (Nanjing University). The web page of the meeting can be found at <https://indico.bnl.gov/event/8315/>.

The workshop focused on evaluating recent progress toward a comprehensive program of pion and kaon structure studies at the Electron-Ion Collider (EIC) and identifying and developing new opportunities at the EIC and elsewhere. Its near-term goals included expansion of existing documentation, driving toward a significant new element in the EIC User Group Physics and Detector Handbook, and developing contributions as part of the ongoing Yellow Report Initiative.

The meeting gathered members of the academic and laboratory communities interested in recent experimental developments, new theoretical insights and rapid computational advances, as well as high-level phenomenology in the form of global structure function fitting frameworks. It also included discussions of new avenues, like machine learning and exascale computing.

The workshop is linked into the inSPIRE data base: <https://inspirehep.net/conferences/1816008?ui-citation-summary=true> and at the bottom-left

of the inSPIRE page, under the website tag, one finds a link to the Zenodo site that hosts all presentations: <https://zenodo.org/communities/pieic-2020?page=1&size=20>.

All presentations are Open Access, are associated with a unique DOI, and can be cited using the toolbox at the bottom-right of the presentations “view page.”

7.4 LaMET 2020 Summary

(Communicated by Martha Constantinou (marthac@temple.edu) and Yong Zhao (yzhao@bnl.gov))

The LaMET 2020 meeting was held virtually during 7-11 September 2020. It was a joint event by the Center for Nuclear Femtography (CNF) at SURA in Washington DC and the Center for Frontiers in Nuclear Science (CFNS) at Stony Brook University/Brookhaven National Laboratory. The organizing committee consisted of X. Ji (Chair), M. Constantinou, K. Orginos, P. Petreczky, A. Shaefer, W. Wang, F. Yuan, Y. Zhao.

The meeting attracted 88 participants worldwide, and the program consisted of 26 talks. Details on the program and links to the talks can be found on the indico page <https://indico.bnl.gov/event/7252/timetable/#20200910.detailed>.

The Workshop’s main goal was to bring together scientists from lattice QCD and phenomenology, with expertise on methods to access the x -dependence of distribution functions. Novel results on quark and gluon parton distribution functions (PDFs), quark generalized distribution (GPD) functions, and quark transverse-momentum dependent (TMD) distribution functions have been presented. The approaches presented included quasi distributions, pseudo distributions, current-current correlators, and a hadronic tensor method. These methods can relate hadronic matrix elements containing non-local operators with light-cone distribution functions. The connection is based on a factorization theorem, which can be implemented either in momentum or coordinate space.

For the lattice calculation of PDFs, the two-loop matching coefficients became available for the quasi-PDF or the equal-time quark bilinear correlations (R. Zhu, Z.-Y. Li). A novel hybrid scheme was proposed to renormalize long-range equal-time quark correlations for the quasi-PDF (Y. Zhao) to achieve a controlled calculation of the x -dependence of the PDF with Fourier transform (J. Zhang). With increased statistics and improved systematic analysis, the pion valence quark distribution, meson distribution amplitudes and the proton isovector quark PDF were calculated with multiple lattice ensembles and extrapolated to physical limits by different groups (X. Gao, J. Hua, R. Suffian, J. Karpie, C. Egerer). The flavor separation of light and strange quark helicity PDFs has been achieved for the first time by calculating disconnected diagrams (F. Manigrasso). Apart from the quark PDFs, the first lattice calculation of gluon PDF was performed (Z. Fan) with one-loop matching that was recently derived (W. Morris). Moreover, the lattice efforts have extended to the higher-twist PDFs, as the first lattice results of the twist-3 distribution $g_T(x)$ (K. Cichy) was presented with the study of one-loop perturbative matching (S. Bhattacharya).

There has also been rapid progress towards the 3D imaging of the proton in both coordinate and momentum spaces. For coordinate-space imaging, the x - and t -dependence of GPD was calculated for the first time on the lattice (M. Constantinou). On the other hand, with the recent development inspired by LaMET, novel methods have been proposed to calculate the nonperturbative information about TMDs for momentum-space imaging (Y. Liu, A. Vladimirov, S. Schindler). The nonperturbative Collins-Soper kernel for TMD evolution has

been calculated on the lattice (P. Shanahan, M. Schlemmer, Q.-A. Zhang), demonstrating that it is robust to extract this quantity with contemporary lattice resources. Besides, an exploratory calculation of the TMD soft function has also been carried out (Q.-A. Zhang), which, along with the quasi TMD distributions, completes the lattice determination of the TMDPDFs.

The Workshop featured in-depth discussions on the theoretical subtleties that need to be understood on factorization and renormalization and the relation between the different approaches. The participants had the opportunity to interact outside the formal program via a Slack working space. The recordings of the talks and discussions can be found on the front page of the Workshop (<https://indico.bnl.gov/event/7252/overview>).

8 Forthcoming Hadron Physics Meetings

Meetings of interest to GHP's membership are listed at Mark Manley's page: <http://crr2.kent.edu/manley/BRAGmeetings.html>. In this connection, if there is a meeting you feel should be included, please send the appropriate information to Mark Manley (manley@kent.edu).

The list here is based on Mark's page. It is reproduced from the March 2020 newsletter, updated with information as to whether the conference was canceled or postponed. If a conference took place or no further information is available, i.e. a web page has disappeared, it is removed from the list.

Note that the ECT* is closed physically until the end of 2020. The remaining workshops for 2020 are either postponed or will proceed virtually. The list here is as up to date as possible. The INT is hosting virtual seminars and, while some programs have been compressed held virtually, others are postponed until a later date, see below.

The situation remains fluid. Meetings that have been postponed to future dates may either be further postponed or held virtually, depending on circumstances. Please check the conference sites for up to date information.

- DIS2020: XXVIII International Workshop on Deep Inelastic Scattering and Related Subjects (Brooklyn, NY, USA, 23-27 March 2020) <https://www.stonybrook.edu/cfns/dis2020/> **CANCELED**
- QCD Evolution Workshop 2020 (Los Angeles, CA, USA, 27 April - 1 May 2020) <https://conferences.pa.ucla.edu/qcd-evolution-2020/> **Postponed to 10-14 May 2021**
- Origin of the Visible Universe: Unraveling the Proton Mass (INT Workshop INT-20-77W, Seattle, WA, USA, 4-8 May 2020) <http://www.int.washington.edu/PROGRAMS/20-77W/> **Postponed, no new date given**
- CHARM 2020: 10th International Workshop on Charm Physics (Mexico City, Mexico, 18-22 May 2020) <https://indico.nucleares.unam.mx/event/1488/> **Postponed to 31 May - 4 June 2021**
- Transversity 2020: 6th International Conference on Transverse Polarization Phenomena in Hard Processes (Pavia, Italy, 25-29 May 2020) <https://agenda.infn.it/event/19219/>

Postponed, no new date given

- Hadronic Parity Nonconservation II (INT Workshop INT-19-76W, Seattle, WA, USA, 8-10 July 2020) <http://www.int.washington.edu/PROGRAMS/19-76W/> **Postponed, no new date given**
- Bad Honnef Physics School: Methods of effective field theory and lattice field theory (Bad Honnef, Germany, 24 July - 2 August 2020) <https://www.dpg-physik.de/veranstaltungen/2020/methods-of-effective-field-theory-and-lattice-field-theory> **Postponed to 9-18 July 2021**
- Conf XIV: The XIVth Quark confinement and the Hadron spectrum conference (Stavanger, Norway, 27 July - 1 August 2020) <https://ux.uis.no/confxiv/> **Postponed to 2-7 August 2021**
- Lattice 2020: The 38th International Symposium on Lattice Field Theory (Bonn, Germany, 3-8 August 2020) <https://indico.hiskp.uni-bonn.de/event/1/> **CANCELED, will be held in Bonn in 2022**
- Gordon Research Conference on Photonuclear Reactions: Frontiers in Nuclear and Hadronic Physics (Holderness, NH, USA, 9-14 August 2020) <https://www.grc.org/photonuclear-reactions-conference/2020/> **Postponed to 7-12 August 2022**
- PANIC2020: 22nd International Conference on Particles and Nuclei (Lisbon, Portugal, 31 August - 4 September 2020) <https://indico.lip.pt/event/592/> **Postponed to 30 August - 3 September 2021**
- QWG 2020: 14th International Workshop on Heavy Quarkonium (Davis, CA, USA, 14-18 September 2020) <https://indico.cern.ch/event/838970/overview> **Postponed to 22-26 March 2021**
- Exploring High μ_B Matter with Rare Probes (ECT*, Trento, Italy, 7-11 September 2020) <http://www.ectstar.eu/node/4563> **Postponed to 2021**
- Spin 2020: 24th Int. Spin Symposium (Matsue, Japan, 21-25 September 2020) <http://spin2020.riken.jp/> **Postponed to fall 2021, no dates given**
- Baryons 2020: International Conference on the Structure of Baryons (Seville, Spain, 22-25 September, 2020) <https://www.upo.es/baryons2020/> **Postponed to 19-22 October 2021**
- HF-WINC 2020: The 8th International Workshop on Heavy Flavour Production in Nuclear Collisions (Torino, Italy, 12-15 October 2020) <https://indico.cern.ch/event/883427/> **Postponed to 14-18 June 2021**
- DIS2021: XXVIII International Workshop on Deep Inelastic Scattering and Related Subjects (Amsterdam, The Netherlands, 12-16 April 2021) <https://indico.cern.ch/event/093748/>
- Heavy Flavor Transport in QCD Matter (ECT*, Trento, Italy, 26-30 April 2021) <http://www.ectstar.eu/workshops/heavy-flavor-transport-in-qcd-matter/>
- SQM 2021: The 19th International Conference on Strangeness in Quark Matter (Busan, Korea, 17-22 May 2021)

- STRANU: Hot Topics in Strangeness Nuclear and Atomic Physics (ECT*, Trento, Italy, 24-28 May 2021) <http://www.ectstar.eu/workshops/stranu-hot-topics-in-strangeness-nuclear-and-atomic-physics/>
- Saturation and Diffraction at the LHC and the EIC (ECT*, Trento, Italy, 28 June - 2 July 2021) <http://www.ectstar.eu/workshops/saturation-and-diffraction-at-the-lhc-and-the-eic/>
- LC2021 - Physics of Hadrons on the Light Front (Jeju, South Korea, 5-10 July 2021) <https://indico.cern.ch/event/938795/>
- Lattice 2021: The 38th International Symposium on Lattice Field Theory (Cambridge, MA, USA, 25-31 July 2021) <https://ctp.lns.mit.edu/lattice2021/>
- Lepton-Photon 2021: XXX International Symposium on Lepton-Photon Interactions at High Energies (Manchester, UK, 9-14 August 2021) <https://www.leptonphoton2021.org/>
- Theoretical and Experimental Challenges in Flavour Hadrons, Heavy Quarkonia and Multiquark Physics (ECT*, Trento, Italy, 30 August - 3 September 2021) <http://www.ectstar.eu/workshops/theoretica-and-experimental-challenges-in-flavor-hadrons-heavy-quarkonia-and-multiquark-physics-2/>
- LFC21: Strong Interactions from QCD to New Strong Dynamics at LHC and Future Colliders (ECT*, Trento, Italy, 6-10 September 2021) <http://www.ectstar.eu/lfc21-strong-interactions-from-qcd-to-new-strong-dynamics-at-lhc-and-future-colliders/>
- QNP 2021: Quarks and Nucleon Physics (Bonn, Germany, 20-24 September 2021)
- Quark Matter 2021: The 29th International Conference on Ultrarelativistic Nucleus-Nucleus Collisions (Krakow, Poland, 3-9 October 2021) <https://indico.cern.ch/event/895086/>
- Tomography of light nuclei at an EIC (ECT*, Trento, Italy, 25-29 October 2021) <http://www.ectstar.eu/workshops/tomography-of-light-nuclei-at-an-eic/>

GHP members might also be interested in other conferences and workshops listed at the following sites:

- ECT* ... www.ectstar.eu
- INT ... www.int.washington.edu/PROGRAMS/programs_all.html
- JLab ... www.jlab.org/conferences
- NuPECC ... <http://www.nupecc.org/index.php?display=events>

*** Disclaimer ***

THE COMMENTS AND CONTRIBUTIONS IN THIS NEWSLETTER ARE NOT PEER REVIEWED. THEY REPRESENT THE VIEWS OF THE AUTHORS BUT NOT NECESSARILY THOSE OF THE AMERICAN PHYSICAL SOCIETY.

THIS GHP NEWSLETTER WAS EDITED BY RAMONA VOGT FOR THE EXECUTIVE COMMITTEE.