

Jefferson Lab Users Organization Board of Directors Visit

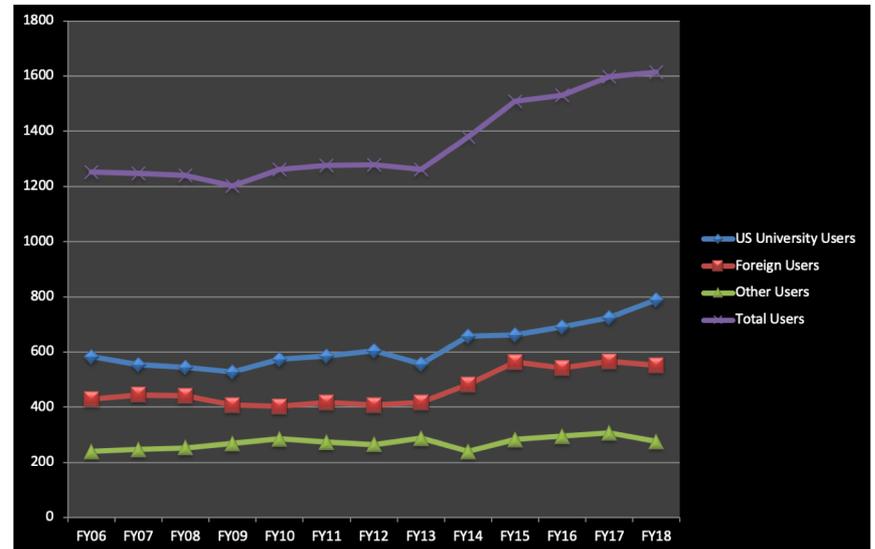
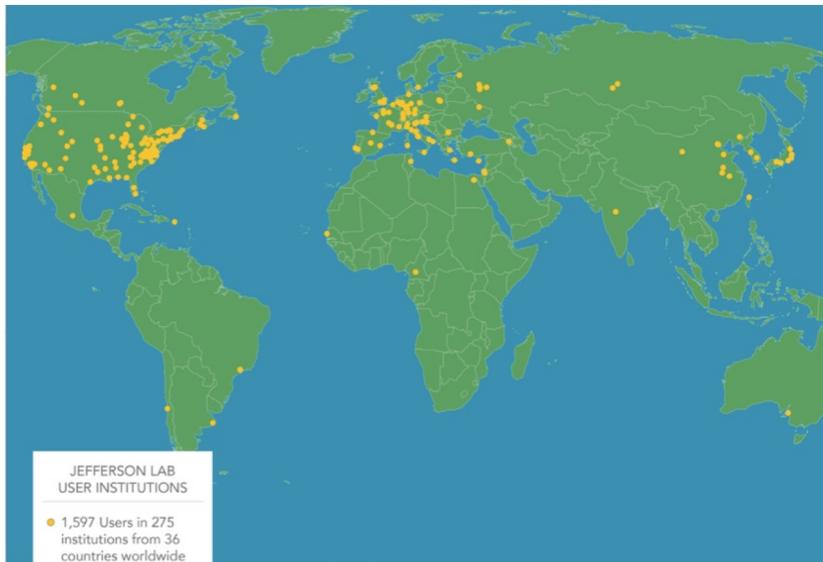
June 13, 2019

Or Hen (MIT),
Yordanka Ilieva (U of South Carolina),
and Julie Roche (Ohio U).

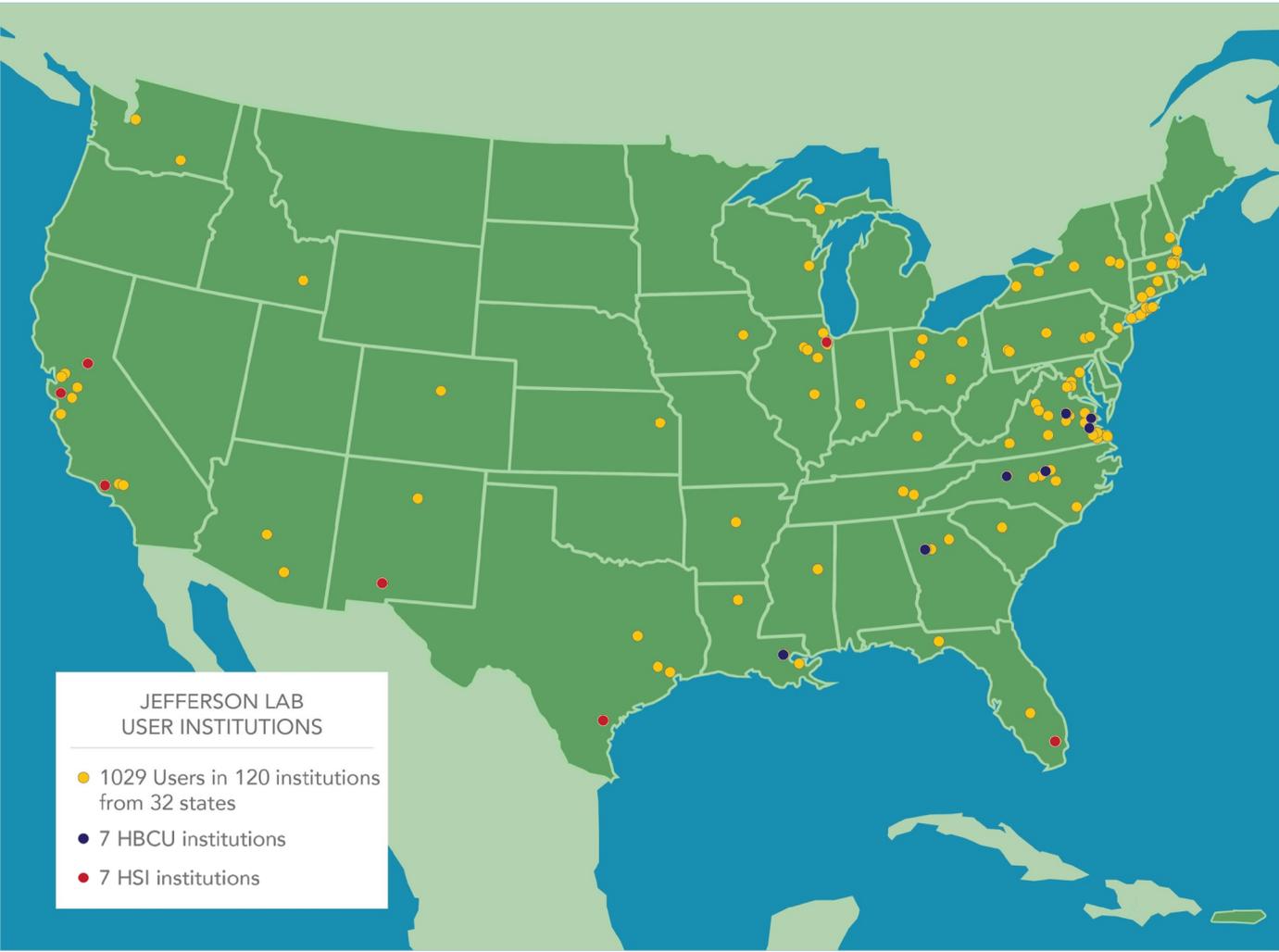
Enthusiastic and Growing Users Organization

1600+ Users, 550+ International Users [FY18]

- Steady growth due to strong interest in the 12 GeV program
- Largest users organization worldwide among nuclear physics labs.



JLab affiliated institutions in the US



- 425 Physics Letters and Physical Review Letters publications; 1,459 in other refereed journals

- 608 PhDs granted; 211 more in-progress

FY17 numbers

JLUO Board of Directors (JLUO BoD)



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Quality of Life



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User/Lab Interaction



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Experiment/Theory Liason



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Outreach/Computing



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Experiment/Theory Liason



TORRI ROARK
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Old Dominion University

Graduate Students



ERIC POOSER
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Jefferson Lab

Post-Docs

- **Community building:** Encourage and assist scientists and engineers in the use of the Continuous Electron Beam Accelerator Facility
- **Representation the JLab Users** in front of JSA, the JLab Management, and outside stakeholders
- **Outreach:** promote the most effective utilization of CEBAF for the common good and welfare of society
- **Elected positions**

  JULIE ROCHE rochej@ohio.edu Ohio University Chair	  WILLIAM BROOKS william.brooks@usm.cl Universidad Santa María Chair-Elect	  KENT PASCHKE kdp2c@Virginia.edu University of Virginia Vice-Chair	  KISHNA KUMAR krishna.kumar@stonybrook.edu Stony Brook University Past-Chair	 LORELEI CHOPARD lorelei@jlab.org Jefferson Lab Secretary/Treasurer	  MIAA EL FASSI elfassi@jlab.org Mississippi State University Outreach	  BRAD SAWATZKY brads@jlab.org Jefferson Lab Quality of Life
  DANKA ILIEVA jordanka@physics.sc.edu University of South Carolina User/Lab Interaction	  CARLOS MUNOZ CAMACHO munoz@ipno.in2p3.fr Institut de Physique Nucléaire Orsay Outreach/Computing	  OR HEN hen@mit.edu MIT Outreach/Computing	  IAN CLOET icloet@anl.gov Argonne Experiment/Theory Liason	  DORRI ROARK troar001@odu.edu Old Dominion University Graduate Students	  ERIC POOSER pooser@jlab.org Jefferson Lab Post-Docs	

 Spokesperson of one or more 12 GeV experiment

 Relocated self or students or postdocs to the Jlab campus for more than 3 months for 12 GeV data taking

 Not a US citizen

  US funding sources

 International funding sources (including detectors investments)

The 12 GeV JLab era is here

Topic	Hall A	Hall B	Hall C	Hall D	Other	Total
Hadron spectra as probes of QCD <i>Yordanka</i>	0	2	1	3	0	6
Transverse structure of the hadrons <i>Ian</i>	6	3	3	1	0	13
Longitudinal structure of the hadrons <i>Ian</i>	2	3	7	0	0	12
3D structure of the hadrons <i>Julie, Ian</i>	5	9	6	0	0	20
Hadrons and cold nuclear matter <i>Or, Ian</i>	8	5	7	0	1	21
Low-energy tests of the Standard Model and Fundamental Symmetries	3	1	0	1	2	7
Total	24	23	24	5	3	79
Total Experiments Completed	6.9	5.4	4.8	1.2	0	18.3
Total Experiments Remaining	17.1	17.6	19.2	3.8	3.0	60.7

Current Status

JLab users are now well capitalizing on the 12-GeV investment!

- Accelerator ran on average 26.5 weeks in each of FY18 and FY19, 50 Ph.D. students took thesis data; New spectrometers are terrific.

We appreciate the DOE investment in the past two years to maintain CEBAF's energy, to operate it reliably at high energy and to refurbish the ESR.

- Excitement in the JLab community (increased number of participants at Collaboration meetings, more talks by students).
- Students are graduating and moving on to both industry and academia positions: 22 Ph.D. in FY18, 10 Ph.D. reported as of 06/12 for FY19

Current Status

JLab users are now well capitalizing on the 12-GeV investment!

- High-impact 6-GeV and first 12-GeV results are getting published: Nature, Phys. Rev. Lett., Phys. Lett. B
 - MARATHON: $(e, e'p)$ submitted for publication; results presented at APS
 - Hall-D: J/ψ results submitted for publication
 - Hall-A: DVCS results finalized, publication under preparation
 - Hall-B: PRAD final results submitted for publication
- A lot of interest by the broader community! Plenary talks at DNP, INPC2019, NSTAR2019, and other high-impact venues.
- The future is here (SBS about to start, Moller progressing, ...).

Our Asks: (1)

Steady increase in support of JLab user groups

12 GeV started in earnest. The current funding puts a strain on the lean manpower to run and deliver on 12-GeV experiments.

- Users are working hard to analyze 12 GeV data, in parallel to running new experiments and collecting more data, and to reduce the existing experiments backlog.
- We are optimizing resources, but we need help from DOE.

Increase the funding for **JLab students and postdocs** to allow timely delivery on the 12-GeV science.

Our Asks (2)

Continue to support the machine reaching its design performance.

Thank you for the past support!

CEBAF at 12 GeV is a powerful tool that needs to be used at its maximal capacity: 35 weeks/year, reaching maximal energy of 12 GeV.

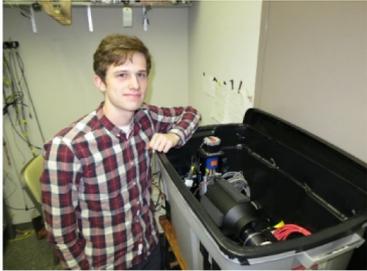
The users are especially concerned about reaching stable operation at maximal energy.

Ask 3: Support Jlab Users excitement for the EIC Science

- When CD0 is announced for the EIC – *we ask that there is a sufficient allocation of resources to allow the Jefferson Lab User community to explore and further develop the science case for the EIC*
 - We suggest this be done through a community wide FOA in EIC science
 - At an appropriate later time there should be Town Hall Meeting for the EIC
- With the recent completion of the 12 GeV upgrade Jefferson Lab Users currently lack the resources and time to invest as much as they would like in EIC science
- There is a concern that unless the whole community can further develop the EIC science case – *e.g., by detailed detector and physics simulations for gluon imaging processes* – that we will build an EIC that cannot deliver this physics within the time window needed for the vibrancy of our field

Spare

Training the next generation of scientists (undergraduates)



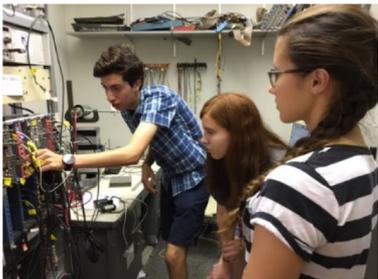
Derek Boylan – construction of test setup and characterization of large diameter PMTs, now project engineer at Cerillo, developing biomedical instrumentation

Example from Catholic University of America REU program



Katya Gilbo– conceptual design studies for the Neutral Particle Spectrometer, now graduate student in biomedical engineering

“Working with CUA’s Nuclear Physics group as a summer intern was an absolutely amazing experience...and I came out with much more knowledge of nuclear physics than I came in with. My love for nuclear physics has been solidified in the past few weeks, and I can’t wait to learn more about it during my college education.”



Salim Roustom, Abigail McShane, Dannie Griggs – Neutral Particle Spectrometer component characterization (NSF MRI) and simulation studies for pion and kaon structure function experiments (NSF REU)

It has been a privilege to work with you and the Nuclear Physics Group. I never would have imagined that I would have had the opportunity to work on the front lines of Physics research just out of high school. I am thankful for not only the hands-on experience of both the experimentation and simulation aspects of the research, but also for the chances to present my own work at the APS conferences.

Recent JLab Alumni Benefiting Society

Hospital of the University of Pennsylvania.
Works on small animal radiation research and on quality assurance and safety in proton therapy treatment delivery. Also works as adjunct professor at the Physics Department, and on D&I of underrepresented groups in physics.



Steven Avery
PhD 2002, Hampton
Based on JLab/Hall C project

Associate Professor of Radiation
Oncology

National Oceanic and Atmospheric Administration.
(NOAA). Works on terrestrial gravity measurements, used both for geodesy and for practical applications like mineral locations and elevation measurements, correcting for general relativity effects on earth. Member of the National Geodetic Survey.



Derek Van Westrum
PhD 1998, Colorado
Based on JLab/Hall C project

Geodesy Subject Matter Expert

Advanced Photon Source at Argonne National Lab.
Leads ANL efforts to develop specialized x-ray detectors for scientific applications. The synchrotron x-ray sources provide intense x-ray beams, facilitating a host of investigational techniques for nearly every field in science and engineering. While a postdoc, managed construction and installation of MINERvA detector at Fermi National Lab.



Rebecca Bradford
PhD 2005, CMU
Based on JLab/Hall B project
Postdoc at U. of Rochester

ANL Staff Scientist