

Report on the Workshop “ Next Generation of Nuclear Physics with JLab12 and EIC”, Feb 11-13, 2016, Florida International University, Miami, FL

Organizers: W. Brooks (U. Santa Maria, Valparaiso, Chile), R. Dupre (Orsay, France), C. Hyde (Old Dominion U.), M. Sargsian (Florida International U.) and Ch. Weiss (Jefferson Lab).

Webpage: <https://www.jlab.org/indico/event/121/>

Participants:

A topical workshop ”Next-Generation Nuclear Physics with JLab12 and EIC” was held at Florida International University, Miami, FL, 10-13 February 2016. The event brought together 55 researchers in experimental and theoretical nuclear physics from the U.S. and abroad (Australia, Belgium, Chile, France, Germany, Israel, Italy, Japan, Russia), including 10 graduate students and 12 junior researchers.

Discussed Topics:

The workshop assessed the scientific opportunities in high-energy electron scattering from nuclei with the Jefferson Lab 12 GeV Upgrade and a future Electron-Ion Collider (EIC). The main goal was to develop a common physics perspective on nuclear measurements with JLab 12 GeV and EIC (synergies, complementarity).

Scientific discussion at the workshop was organized around four physics topics:

- (A) Short-range nuclear structure: High-momentum components in nuclei, short-range NN correlations, connection with QCD
- (B) Neutron structure and spin: Extraction of free neutron structure functions, spectator nucleon tagging, polarized nuclei
- (C) Nuclear modifications and coherent effects: Nuclear parton densities, EMC effect, antishadowing, shadowing, saturation
- (D) Parton propagation and hadronization: Color transparency, parton propagation in medium, hadronization, jets

Within each topic the presentations addressed the fundamental physics questions, the scope and impact of JLab 12 GeV experiments, the opportunities with a future

EIC, and the requirements for EIC machine and detector parameters. Content is available at the workshop webpage.

Summary and Recommendations:

Overall, the workshop captured the excitement about the long-term prospects for high-energy nuclear physics with electromagnetic probes and summarized the intellectual challenges in the field. The JLab 12 GeV experiments are starting and will deliver results in the next few years. To realize the potential of a future EIC, a concerted effort by the nuclear physics community will be necessary over the same time and beyond. It was recommended to prepare and publish the proceedings of the workshop in the form that can serve as a framework for next generation nuclear physics studies at JLab12 and EIC.

Budget:

The workshop was supported financially by the Jefferson Science Associates' Initiative Fund on the level of \$5000 and by Jefferson Lab on the level of \$3000. This support was used solely to provide a partial support to key-note speakers, graduate students and junior scientist. (The list of supportees and the amount of the support is attached. The above amount was transferred to FIU and the paperwork was processed by the office of Physics Department.

The auditoriums and audio/video materials were provided by FIU free of the charge.

The additional source of the budget was the conference fee \$200 per participant (\$100 per graduate student). This fund was used to cover expenses related to the reception, coffee breaks, transportation, writing materials etc. The remaining of the fund (estimated \$3000) will be used for publication of the mentioned above proceedings.

Firs Last tName	Institution	Rank	Support
Shankar Adhikari	Florida International University	Student	100
Erez Cohen	Tel Aviv University/ISRAEL	Student	500
Wim Cosyn	Ghent University/BELGIUM	Postdoc	500
Nadia Fomin	University of Tennessee/USA	Assistant Professor	500
Adam Freese	Florida International University/USA	Student	100
Mohammad Hattawy	Argonne National Laboratory/USA	Postdoc	500
Narbe Kalantarians	Hampton University/USA	Postdoc	500
Shunzo Kumano	KEK/J-PARC/JAPAN	Senior Scientist	500
Dhiraj Maheswari	Florida International University/USA	Student	100
Gerald Miller	University of Washington/USA	Senior Scientist	500
Carlos Munoz Camacho	IPN, CNRS/IN2P3/France	Senior Scientist	500
Thomas Neff	GSI Darmstadt/GERMANY	Senior Scientist	600
Michael Paolone	Temple University/USA	Assistant Professor	500
Eli Piasetzky	Tel Aviv University/ISRAEL	Senior Scientist	600
Sergio Scopetta	Perugia University/ITALY	Senior Scientist	600
Matthew Sievert	Brookhaven National Laboratory/USA	Postdoc	500
Mark Strikman	Penn State University/USA	Senior Scientist	600
Frank Vera	Florida International University/USA	Student	100
Juliette Victoria	Florida International University/USA	Student	100
Carlos Yero	Florida International University/USA	Student	100
		Total	8000