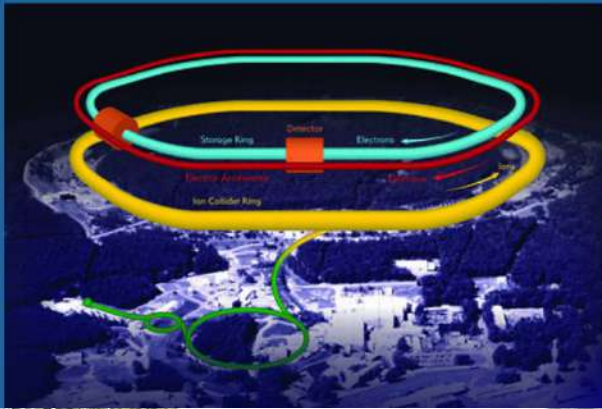


The 2023 CFNS-CTEQ Summer School on the Physics of the Electron-Ion Collider, June 5-16, 2023





Stony Brook University hosted the 2023 CFNS-CTEQ Summer School on the Physics of the Electron-Ion Collider (EIC) during the period 5-16 June 2023. The school is jointly organized by Center for Frontiers in Nuclear Science (CFNS) at Stony Brook University and the Coordinated Theoretical-Experimental Project on QCD (CTEQ) covering topics common to both nuclear and particle physics. This year's school hosted 40 students from 9 countries, including North America, Europe, Africa, and Asia.

This school provides the participants with a deeper understanding and improved competency of the fundamental ideas, tools, and techniques that serve as the foundation for investigations of current and future experimental facilities, including the upcoming Electron-Ion Collider (EIC) experiment.

The 2023 CFNS-CTEQ School addressed the pressing educational needs of junior physicists involved in forefront research investigations. The format of this program fosters student--lecturer interaction. This experience prepares our students for successful careers both within the physics discipline, and beyond.

The schools consist of ten days of lectures and discussions where students interact closely with distinguished experts with a broad range of expertise. The audience for these schools is primarily the younger generation of physicists--typically advanced graduate students and postdocs, and the group includes students from both experimental and theoretical disciplines.

Schedule Overview

Week #1	Mon 05	Tue 06	Wed 07	Thu 08	Fri 09
9:00	Serman	Serman	Serman	Lajoie	Lajoie
10:30	Sichtermann	Sichtermann	Stewart	Satogata	Satogata
13:00	Stewart	Stewart	Discussion	H.-W. Lin	H.-W. Lin
14:30	Britton	Britton	Britton	Britton	Student Presentation
19:30	Discussion	Discussion	PJ Dinner	Discussion	BBQ 5PM
Week #2	Mon 12	Tue 13	Wed 14	Thu 15	Fri 16
9:00	Dawson	Dawson	Korepin	Stasto	Stasto
10:30	C. Gal	C. Gal	Eyser	Eyser	Korepin
13:00	Hobbs	Hobbs	Discussion	Venugopalan	Venugopalan
14:30	Deconinck	Deconinck	Deconinck	Deconinck	Student Presentation
19:30	Discussion	Discussion	open	Discussion	TBD

Schedule Detail:

2023 CFNS-CTEQ School Schedule						
4 June 2023	05 Jun 2023	06 Jun 2023	07 Jun 2023	08 Jun 2023	09 Jun 2023	10 Jun 2023
Sunday	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday
Arrive	Day 1	Day 2	Day 3	Day 4	Day 5	
8:00	Breakfast	Breakfast	Breakfast	Breakfast	Breakfast	
9:00	Sterman	Sterman	Sterman	Lajoie	Lajoie	
10:00	Coffee	Coffee	Coffee	Coffee	Coffee	
10:30	Sichtermann	Sichtermann	Stewart	Satogata	Satogata	
11:30	Lunch	Lunch	Lunch	Lunch	Lunch	
13:00	Stewart	Stewart	Q&A/Recitation	Lin	Lin	
14:00	Coffee	Coffee	Coffee	Coffee	Coffee	
14:30	Britton	Britton	Britton	Britton	Student Presentations	
	Dinner	Dinner	Dinner	Dinner	Dinner	
19:30	Q&A/Recitation	Q&A/Recitation	Free evening	Q&A/Recitation		
11 Jun 2023	12 Jun 2023	13 Jun 2023	14 Jun 2023	15 Jun 2023	16 Jun 2023	17 Jun 2023
Sunday	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday
	Day 6	Day 7	Day 8	Day 9	Day 10	Depart
8:00	Breakfast	Breakfast	Breakfast	Breakfast	Breakfast	
9:00	Dawson	Dawson	Korepin	Stasto	Stasto	
10:00	Coffee	Coffee	Coffee	Coffee	Coffee	
10:30	Gal	Gal	Eyser	Eyser	Korepin	
11:30	Lunch	Lunch	Lunch	Lunch	Lunch	
13:00	Hobbs	Hobbs	Q&A/Recitation	Venugopalan	Venugopalan	
14:00	Coffee	Coffee	Coffee	Coffee	Coffee	
14:30	Deconinck	Deconinck	Deconinck	Deconinck	Student Presentations	
	Dinner	Dinner	Dinner	Dinner	Dinner	
19:30	Q&A/Recitation	Q&A/Recitation	Free evening	Q&A/Recitation		

Organizing Committee:

Ross Corliss (CFNS, Stony Brook University)

Socorro Delquaglio (CFNS, Stony Brook University)

Abhay Deshpande (CFNS Director, Stony Brook University)

Fred Olness (SMU, and CTEQ Collaboration)

Alexei Prokudin (Committee Chair, and Penn State University Berks)

Speaker	Topic
George Sterman (Stony Brook U)	Deep Inelastic Scattering & Collinear Factorization
Ernst Sichtermann (Lawrence Berkeley National Lab)	EIC Physics: An Experimentalist's Perspective
Iain Stewart (MIT)	3D Hadronic Structure for EIC
Thomas Britton (JLab)	AI/ML: Tools of the trade
John Lajoie (Iowa State U)	Particle Detectors and the ePIC Experiment
Todd Satogata (Jefferson Lab)	EIC Accelerator Physics/Technology
Huey-Wen Lin (MSU)	Lattice QCD for EIC Physics
Sally Dawson (BNL)	Introduction To SMEFT
Ciprian Gal (Jefferson Lab)	Electron Beam Polarimetry
Tim Hobbs (Argonne)	The EIC as a Bridge to High Energy Physics
Wouter Deconinck (U. Manitoba)	EIC Tutorial:
Raju Venugopalan (BNL)	QCD at High Parton Density and Heavy Ion Collisions
Vladimir Korepin (Stony Brook U)	Can spin chains describe colored d.o.f. in DIS?
Oleg Eyser (BNL)	Hadron Polarimetry
Anna Staśto (Penn State U)	Small x physics: from HERA, through LHC to EIC

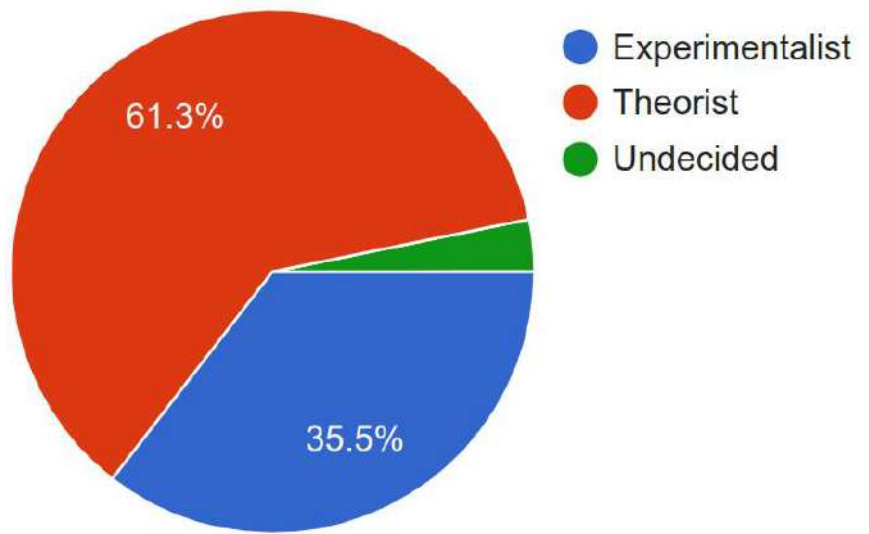
Speakers listed in approximate presentation order.

The full Indico page: <https://indico.bnl.gov/event/17958/>

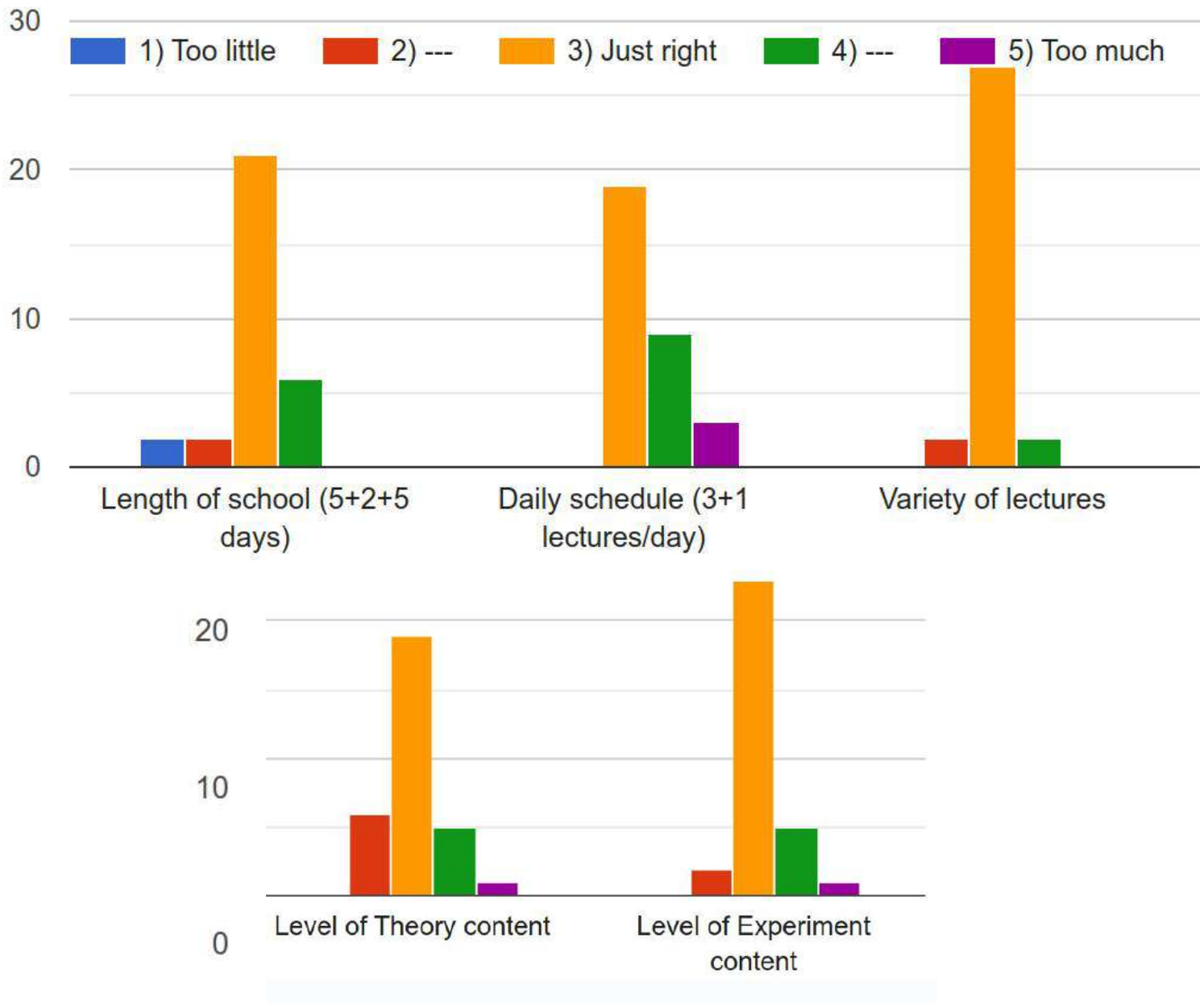
Links to YouTube lecture recordings:

<https://www.youtube.com/playlist?list=PLWobttDK-kk5DU2YJx7PV80y3y-e15K9X>

Participant Representation



Feedback on Logistics



Overall impression of the school:

Complete and unedited comments

It was very good to interact and learn from people from different backgrounds

It was amazing. I learned a lot of useful content for my research and enjoyed the talks that weren't necessarily directly applicable to my research. The discussions inside and outside of normal discussion time were very intriguing.

Seemed to be a good variety of experimental and theory lectures. Certainly everyone was able to see some subject they hadn't been exposed to before.

It is relevant and beneficial, the contact with lecturers is easy and the discussion session was just a great idea

I really like those handwriting lectures.

Very Good

Great, eye opening for the field, and a catalyst for future work with the EIC. Both tutorials, polarization lectures directly connected to my research and the rest inspire future work. Abhay's talk, just like the EIC project, was "timely" and summarized all that we learned over the two weeks and wrapped it all together into a sort of game plan for future work with the project.

Yes, the school was great for me to enhance my understanding.

Yes

Very good overall impression of the school. Yes, several relevant talks were relevant to my research if not all.

Very good. Great selection of speakers and great atmosphere.

The school gave a very useful overview of a wide variety of topics and I learned a lot of new things more or less related to my own research. It really helped me to get "the bigger picture" and understand the context of recent research topics

This is my first international school and it was amazing. I am really grateful to the organizers for providing the funds. It will never be possible without financial support. School is very helpful for broadening my perspective on TMD research. The tutors are really nice and humble and they try their best to convey the knowledge forward. Last but not least, it helps me to make new connections. Obviously, I feel a few diet-related issues initially because I am a vegetarian. Thanks to Wolfie's card and a few vegan/vegetarian options we have here. Having the school dinner at Curry was amazing.

Overall impression is good: I would prefer to have 2 sessions of tutorial and 3 lectures as I describe below

Most of them were not directly related to my current research (Pion Nucleon Scattering), but I enjoyed all of them. I learned a lot of new physics about EIC.

Brilliant - our lectures were for the most part the best in the world. I say "for the most part" reluctantly because I thought ALL of the lecturers were amazing people and scientists. But for our second week, there was at least one that is not well suited to teach an EIC summer school (Vladimir).

The school was excellent! There were many lectures that I can relate to my research, and besides that, I learned a lot about how the experiment will work, which is very important even for a theorist.

I was hoping to develop a greater understanding of the topics of the EIC and this school provided this. Everything was extremely useful for current and potential research.

Very useful talks to give a great overview of the physics of the EIC.

Overall impression was highly positive. Many talks that were highly relevant to my research as well as a good variety to make me think outside of my own research corner.

Very good

The school was a good broad overview of the field and scope of EIC physics. Overall it was fairly close to my research but it would have been good to see more discussion of fragmentation functions.

Very good. The interactions are great.

The lectures are extremely useful for my research!

Such a torrent of information was actually nice. It helps first and foremost to know the language for furthering research in all the various directions one could head in.

Too much concentration on one topic.

Very good. QCD introduction is useful for my research.

Fantastic! As somebody who is transitioning into DIS/EIC physics from a heavy-ion background, this was an immensely valuable experience that really helped kickstart my knowledge in the field. As such, I felt all the talks were relevant and useful to me! On top of that, this was probably the best social environment for a scientific event I've participated in!

Most of the experimental talks were relevant for my research and it helped me to understand a lot.

Thank you for this amazing summer school! I learned so much and had a lot of fun!

I enjoyed the school overall. The variety of lectures was good and I had good discussions with lecturers and colleagues.