The 2026 IITB-CFNS-CTEQ School on Perturbative QCD for EIC

8 – 15 February 2026

The school was hosted by the
Indian Institute of Technology Bombay (IITB) in collaboration with
the **Center for Frontiers in Nuclear Science** (CFNS)
of Stony Brook University, and the **CTEQ Collaboration**

Indian Institute of Technology Bombay

Stony Brook University

The CTEQ Collaboration

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The **Indian Institute of Technology Bombay** (IITB) hosted the **2026 IITB-CFNS-CTEQ School on Perturbative QCD for EIC** in collaboration with the **CTEQ Collaboration** and the **Center for Frontiers in Nuclear Science** (CFNS) of Stony Brook University.

The Department of Physics at the **Indian Institute of Technology Bombay** (IIT Bombay) is a premier global research center dedicated to advancing the frontiers of knowledge across a broad spectrum of physical sciences. The department combines pioneering research with world-class academic training, preparing students and scholars to contribute at the highest levels. Through interdisciplinary collaboration and the integration of advanced experimental and computational methods, the department tackles complex, real-world scientific challenges.

The **Center for Frontiers in Nuclear Science** (CFNS) at Stony Brook University is dedicated to advancing our understanding of quantum chromodynamics (QCD), with a focus on the role of gluons and sea quarks in the structure of nucleons and nuclei. Its mission is to promote and facilitate the realization of the U.S.-based Electron-Ion Collider (EIC) by strengthening the scientific case and fostering global collaboration among researchers engaged in EIC-related science.

The **Coordinated Theoretical-Experimental Project on QCD** (CTEQ) is a multi-institutional collaboration of theorists and experimentalists dedicated to a comprehensive research program in high-energy physics. Centered on Quantum Chromodynamics (QCD), the collaboration explores its implications across the Standard Model and beyond. By fostering close cooperation between theory and experiment, CTEQ advances quantitative predictions and develops innovative projects to further our understanding of fundamental particle interactions.

School Aspirations

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 **2026 IITB-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.

Schedule Overview

2026 IITB-CFNS-CTEQ School Schedule

Registration, all lectures and tutorials will be held in EMBA Classroom, 4th floor, SJMSOM building

8-Feb	9-Feb	10-Feb	11-Feb	12-Feb	13-Feb	14-Feb	15-Feb
Sunday	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday	Sunday
Arrive	Day 1	Day 2	Day 3	Day 4	Day 5	Day 6	Depart
8:30 - 9:00	Registration & welcome						
9:00 - 10:00	Soper Basics of QCD Perturbation Theory	Soper Basics of QCD Perturbation Theory	Soper Basics of QCD Perturbation Theory	Soper Basics of QCD Perturbation Theory	Pisano TMDs	Pisano TMDs	
10:00 - 11:00	Cooper-Sarkar DIS	Deshpande EIC Intro	Deshpande EIC Intro	Olness nPDFs	Mathur Lattice QCD	Mathur Lattice QCD	
11:00 - 11:30	Tea/Coffee	Tea/Coffee	Tea/Coffee	Tea/Coffee	Tea/Coffee	Tea/Coffee	
11:30 - 12:30	Sarkar Neutrinos/Astro	Olness nPDFs	Krishna SM Tests	Krishna SM Tests	Mukherjee EIC Phenomenology	Mukherjee EIC Phenomenology	
12:30-14:00	Lunch in the dining hall of Padmavihar Guest House						
14:00 - 15:00	Cooper-Sarkar DIS	Sarkar Neutrinos/Astro	Ravindran Precision Theory	Free Afternoon	Ravindran Precision Theory	Ravindran Precision Theory	
15:00 - 16:00	Deshpande EIC Intro	Cooper-Sarkar DIS	Tripathi Next-Gen Methods		Tripathi Next-Gen Methods	Tripathi Next-Gen Methods	
16:00 - 16:30	Tea/Coffee	Tea/Coffee	Tea/Coffee	17:15 Inst. Colloquium: Abhay Deshpande P.C. Saxena Aud.	Tea/Coffee	Tea/Coffee	
16:30-18:30	MC Tutorials Tomas Jezo	MC Tutorials Tomas Jezo	MC Tutorials Tomas Jezo		LQCD Tutorial Padmanath M	LQCD Tutorial Padmanath M	
19:30			Conference Dinner 19:30 Gulmohar banquet hall				

Schedule Format

The schools consist of six 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.

Venue:

The school was held on the campus of the Indian Institute of Technology Bombay (IIT-B) in Mumbai, India.

International Organizing Committee:

Asmita Mukherjee (IIT-Bombay & Committee Chair)
Abhay Deshpande (CFNS Director, Stony Brook University & BNL)
Ross Corliss (CFNS, Stony Brook University)
Huey-Wen Lin (Michigan State University & CTEQ Collaboration
Fred Olness (SMU & CTEQ Collaboration)
Zack Sullivan (Illinois Institute of Technology & CTEQ Collaboration)
V. Ravindran (Institute of Mathematical Sciences)

Local Organizing Committee:

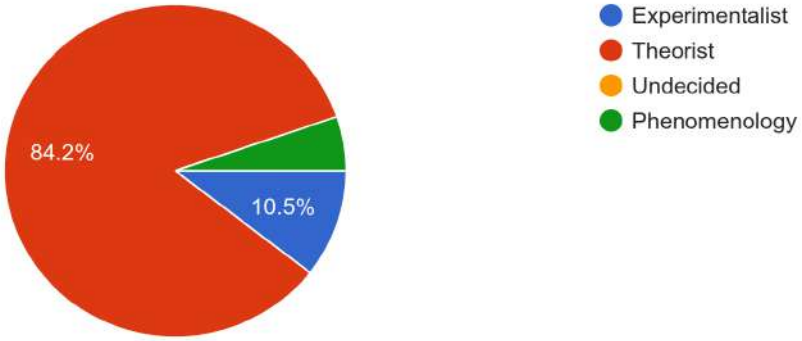
Asmita Mukherjee (IIT-Bombay & Committee Chair)
Manibrata Sen (IIT-Bombay)
Vikram Rentala (IIT-Bombay)
Debojit Sarkar (IIT-Bombay)

Lecturers & Topics:

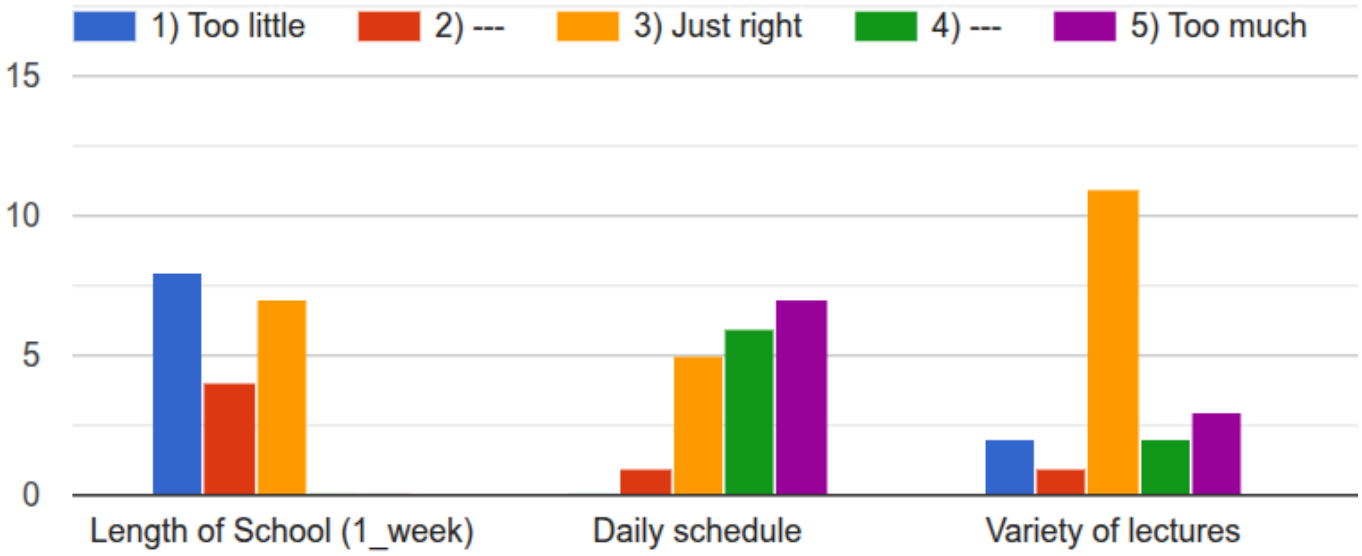
Topic	Speaker	Institute
Basics of QCD Perturbation Theory	Davison E. Soper	University of Oregon
Deep Inelastic Scattering	Amanda Cooper-Sarkar	U of Oxford
Seeing the universe with high energy neutrinos	Subir Sarkar	U of Oxford
EIC Science: an experimental review	Abhay Deshpande	Stony Brook U & Brookhaven National Lab
MC Tutorial: Bridging theory and experiment	Tomas Jezo	Muenster U
New Phenomena at the EIC: nuclear PDFs	Fred Olness	SMU
The EIC and the Global Search for New Physics	Krishna Kumar	University of Massachusetts, Amherst
Modern Methods in QCD	V. Ravindran	The Institute of Mathematical Sciences, Chennai, India
Next Generation Methods	Anurag Tripathi	Indian Institute of Technology Hyderabad
Transverse Momentum Dependent parton distributions (TMDs)	Cristian Pisano	University of Cagliari & INFN Cagliari
An Introduction to Lattice Quantum Chromodynamics	Nilmani Mathur	Department of Theoretical Physics, TIFR
Tomography of the Nucleon	Asmita Mukherjee	Indian Institute of Technology Bombay
Lattice QCD Tutorial	Padmanath Madanagopalan	The Institute of Mathematical Sciences, Chennai, India

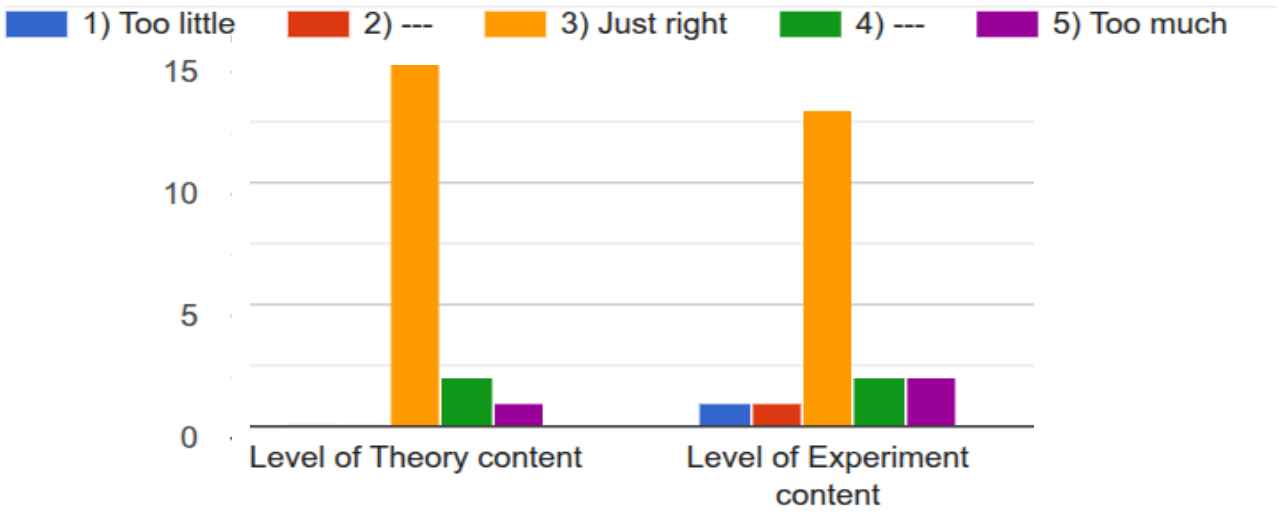
Participants:

This year's school hosted 45 students from North America Europe, and Asia.



Feedback on School Logistics:





Overall impression of the school:

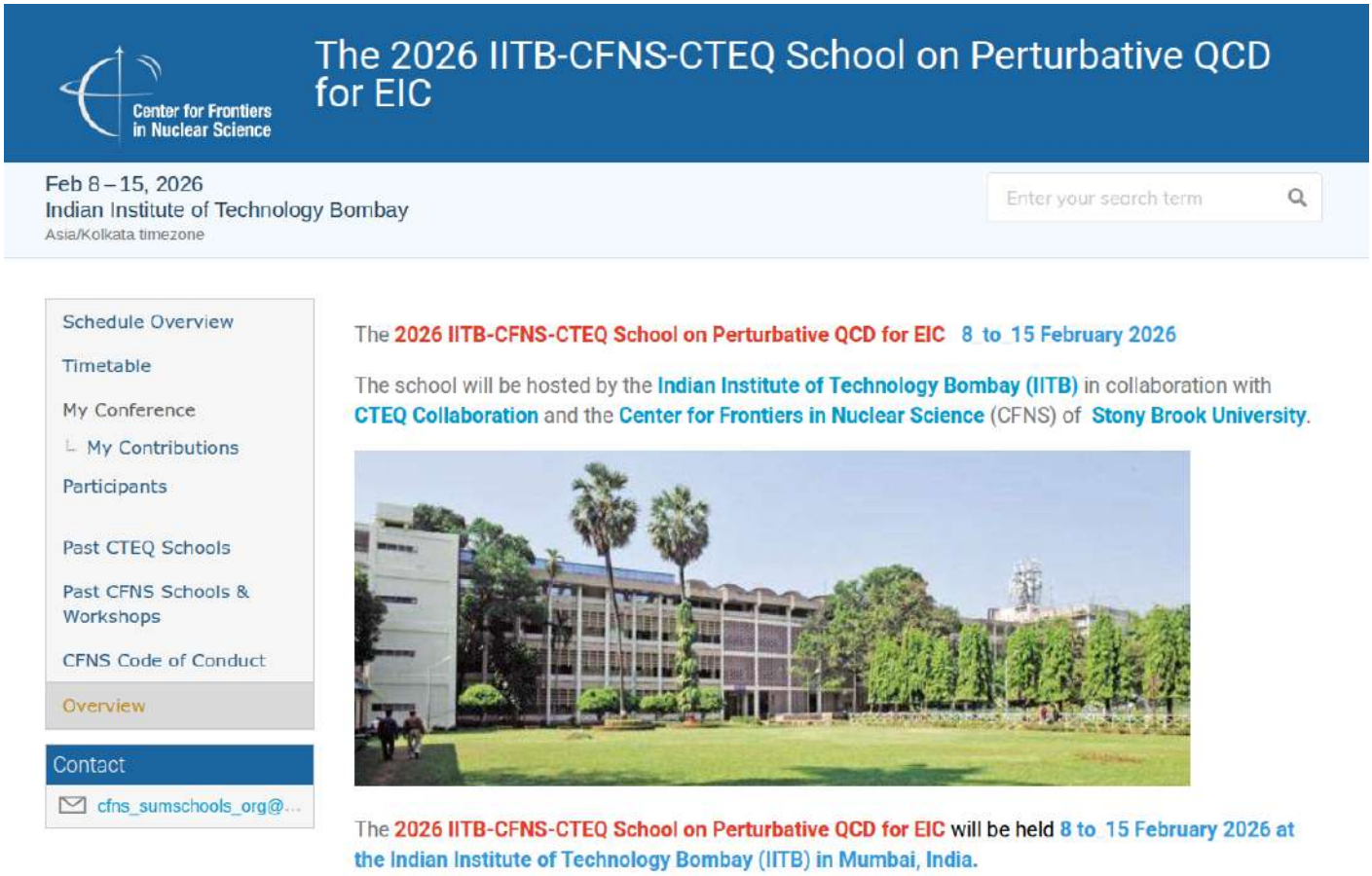
Complete and unedited comments

- It was a nice experience, talks were also very useful.
- The school was highly informative, with talks on QCD introduction, TMDs, DIS, EIC introduction, and the hands-on session being particularly useful. Overall, it was a great experience with excellent interactions with peers and professors, which greatly enhanced my understanding of the topics.
- Loved it so much!!! Relevant and useful.
- Yes
- The school was very detailed and comprehensive.
- Good, the I enjoyed and learned a lot from most of the talks. Some material was repetitive though (ex. Bjorken scaling explained to many times)
- Yes, It was very useful actually specially meeting new people fron all around the world.
- It was a good learning experience overall. Even though it was really tightly scheduled, I enjoyed most of the lectures. I just wished the lectures were spaced out a little better.
- Got to learn many things from some of the the most experienced researchers from their field. All thanks to the school. Thank you Fred and Asmita for allowing me to join, we will definitely meet again in the near future.
- Over all the school was very precise. It was definitely usefull but too much compact and busy. Less time for discussion and exchange of thoughts
- It was amazing school but as it was done in 1 week ,it’s hard to follow every lecture.it would be better to have 15 min break after one lecture and also if they could use white board rather than slides. Organizers did a really great job
- Yes, they were very useful and relevant. It was a great school, organized in a limited budget. It was a good experience indeed.
- It was a really good experience and all the lectures was informative. All the faculties and students were so much interactive and the discussion on tea was really good.
- Yes, the talks and lectures were very useful to me, as I learned many things and got to new topics as well as concepts which will help in my future research.
- yes I found them useful.
- Very good
- Eventful. Lectures enhanced conceptual clarity.
- Relevant
- Yes it is relevant

External Resources:

The full Indico page:

https://indico.cfnssbu.physics.sunysb.edu/event/493/



YouTube Videos of Selected Presentation:
[in preparation]

Selected Photos: