

# **California EIC Consortium Collaboration Meeting 2024**

## **Report of Contributions**

Contribution ID: 1

Type: **not specified**

## Transverse energy-energy correlators in the Color-Glass Condensate

*Thursday, 29 February 2024 16:35 (20 minutes)*

Transverse energy-energy correlators (TEECs) are event-shape observables that can be used to study QCD by examining angular correlations between produced particles. As they are weighted by the energy of the particle, they are an infrared-safe observable that can be calculated to high accuracy. This makes TEECs a potentially useful tool in extracting the target structure in DIS and studying physics in the small- $x$  regime where saturation effects are believed to be important.

In this talk, we will present results for TEECs in back-to-back electron-hadron production in the small- $x$  region of DIS [1]. We establish a factorization theorem given in terms of the hard function, soft function, TEEC jet function, and quark distribution. The quark distribution is written in terms of the small- $x$  dipole amplitudes which incorporate the saturation effects. By considering both proton and nuclear targets in DIS, we demonstrate that TEECs can be a powerful tool to understand gluon saturation and nuclear modification at the upcoming Electron-Ion Collider.

[1] Zhongbo Kang, Jani Penttala, Fanyi Zhao, Yiyu Zhou, arXiv:2311.17142 [hep-ph]

**Primary authors:** ZHAO, Fanyi; PENTTALA, JANI (UCLA); ZHOU, Yiyu; KANG, Zhongbo (UCLA)

**Presenter:** PENTTALA, JANI (UCLA)

**Session Classification:** Thursday Afternoon

Contribution ID: 2

Type: **not specified**

# Welcome

*Thursday, 29 February 2024 09:00 (10 minutes)*

**Presenter:** ARRATIA, Miguel (University of California, Riverside)

**Session Classification:** Thursday Morning

Contribution ID: 3

Type: **not specified**

## UCR Status & Plans

*Thursday, 29 February 2024 09:10 (20 minutes)*

**Presenter:** ARRATIA, Miguel (University of California, Riverside)

**Session Classification:** Thursday Morning

Contribution ID: 4

Type: **not specified**

## UCLA Status & Plans

*Thursday, 29 February 2024 09:30 (20 minutes)*

**Presenters:** HUANG, Huan (UCLA); KANG, Zhongbo (UCLA)

**Session Classification:** Thursday Morning

Contribution ID: 5

Type: **not specified**

## UCB & LBNL Status & Plans

*Thursday, 29 February 2024 09:50 (20 minutes)*

**Presenter:** JACAK, Barbara (UC Berkeley and LBNL)

**Session Classification:** Thursday Morning

Contribution ID: 6

Type: **not specified**

## UCD Status & Plans

*Thursday, 29 February 2024 10:10 (20 minutes)*

**Presenter:** CEBRA, Daniel (University of California, Davis)

**Session Classification:** Thursday Morning

Contribution ID: 8

Type: **not specified**

## UC Berkeley Tracking Updates

*Thursday, 29 February 2024 14:30 (35 minutes)*

I will give some updates on the work done on EICRecon track reconstruction by the Berkeley group.

**Primary author:** LIANG-GILMAN, Beatrice (member@berkeley.edu;student@berkeley.edu;faculty@berkeley.edu;employee@berkeley.edu)

**Presenter:** LIANG-GILMAN, Beatrice (member@berkeley.edu;student@berkeley.edu;faculty@berkeley.edu;employee@berkeley.edu)

**Session Classification:** Thursday Afternoon



Contribution ID: **11**

Type: **not specified**

## Tracking in presence of backgrounds

*Thursday, 29 February 2024 15:05 (20 minutes)*

**Presenter:** STERWERF, Benjamin (staff@berkeley.edu;employee@berkeley.edu;affiliate@berkeley.edu;member@berkeley.edu)

**Session Classification:** Thursday Afternoon

Contribution ID: 12

Type: **not specified**

## **Jets as precision probes in Semi-Inclusive DIS events at the future Electron-Ion Collider**

*Thursday, 29 February 2024 16:15 (20 minutes)*

To explore the potential Jet observable as a probe for the three-dimensional (3D) hadron structure encoded in transverse-momentum-dependent parton-distribution functions (TMD PDFs) and fragmentation functions (TMD FFs).

**Primary author:** GOZLUKLUOGLU, Nihal (student@csun.edu;exl student@csun.edu;applicant@csun.edu)

**Presenter:** GOZLUKLUOGLU, Nihal (student@csun.edu;exl student@csun.edu;applicant@csun.edu)

**Session Classification:** Thursday Afternoon

Contribution ID: 13

Type: **not specified**

## Proton-going ECal design and simulations

*Thursday, 29 February 2024 11:00 (20 minutes)*

The proton-going Electromagnetic Calorimeter (pECal), situated in the Hadron Endcap alongside the forward Hadronic Calorimeter in the ePIC detector configuration, plays a crucial role in the ePIC scientific program for jet and photon/electron measurements. With an inner radius of 30 cm and an outer radius of 170 cm, the pECal spans a pseudorapidity range from 1.4 to 3.5.

The pECal's primary function is to facilitate the identification of  $\pi^0$  decay photons up to 50 GeV and the reconstruction of jets with good hadron compensation in the hadron-going direction. Utilizing a sampling calorimeter design with a W-powder/ScFiber (W/ScFi) structure, initially developed at UCLA, this compact configuration efficiently fits within limited space constraints. Notably, the pECal boasts good energy resolution and fine granularity, meeting the stringent requirements of the ePIC scientific program.

During this presentation, I will show the pECal design and discuss the capabilities of the fECal in differentiating  $\pi^0$  decay photons and identifying heavy-flavor jets from current simulations and machine-learning techniques.

**Primary authors:** HUANG, Huan (UCLA); TSAI, oleg (ucla); XU, Zhiwan (University of California, Los Angeles); JI, Zhongling (UCLA)

**Presenter:** JI, Zhongling (UCLA)

**Session Classification:** Thursday Morning

Contribution ID: 14

Type: **not specified**

## ePIC SVT Air Cooling Studies - Status Update

*Friday, 1 March 2024 11:00 (20 minutes)*

The LBNL and UC Berkeley groups have been studying the feasibility of air cooling the Silicon Vertex Tracker with different air distribution materials. I will present a status update on this work.

**Primary author:** HAGUE, Tyler (Berkeley Lab)

**Presenter:** HAGUE, Tyler (Berkeley Lab)

**Session Classification:** Friday Morning

Contribution ID: 15

Type: **not specified**

## Update on u-channel EIC Analyses

*Thursday, 29 February 2024 15:55 (20 minutes)*

Backward ( $u$ -channel) meson production and DVCS results in baryons undergoing large momentum transfers. These reactions are interesting for their potential to provide insight on the mechanisms behind baryon stopping, and the nature of the baryon number inside the proton. We report an update on various  $u$ -channel physics simulations for the EIC, including a short summary report on our backward DVCS paper, and the status of several physics benchmarks in preparation for the ePIC TDR.

**Primary author:** SWEGGER, Zachary (University of California, Davis)

**Presenter:** SWEGGER, Zachary (University of California, Davis)

**Session Classification:** Thursday Afternoon

Contribution ID: **16**

Type: **not specified**

## Status of realistic-seeded tracking in ePIC

*Friday, 1 March 2024 11:20 (25 minutes)*

This would basically be similar to the TIC meeting summary talk I'll give on Monday Feb. 26th.  
Talk will be about 20 minutes long.

**Primary author:** SCHMOOKLER, Barak (UC Riverside)

**Presenter:** SCHMOOKLER, Barak (UC Riverside)

**Session Classification:** Friday Morning

Contribution ID: 17

Type: **not specified**

## Global Extraction of Nuclear TMDs

*Thursday, 29 February 2024 16:55 (20 minutes)*

Kang group's latest nuclear TMDs global extraction based on Drell-Yan datasets & SIDIS datasets from JLAB, HERMES

**Primary authors:** ZHANG, CONGYUE (UCLA); XING, Hongxi (South China Normal University); TERRY, John (LANL); ALRASHED, Mishary (UCLA); KANG, Zhongbo (UCLA)

**Presenter:** ZHANG, CONGYUE (UCLA)

**Session Classification:** Thursday Afternoon

Contribution ID: **18**

Type: **not specified**

## **Measurement of characteristics of lightguides for forward EMcal for ePIC detector**

*Thursday, 29 February 2024 11:20 (20 minutes)*

**Presenter:** CHENG, YUNSHAN (UCLA)

**Session Classification:** Thursday Morning



Contribution ID: **19**

Type: **not specified**

## **Design and Performance of Insert-like ZDC**

*Thursday, 29 February 2024 12:00 (20 minutes)*

**Presenter:** MILTON, Ryan (UCR)

**Session Classification:** Thursday Morning

Contribution ID: 20

Type: **not specified**

## Light yield studies for prototype calorimeter layers

*Thursday, 29 February 2024 11:40 (20 minutes)*

**Presenter:** RODRIGUEZ, Miguel (UCR)

**Session Classification:** Thursday Morning

Contribution ID: **21**

Type: **not specified**

## **t-reconstruction in the ZDC**

*Thursday, 29 February 2024 14:10 (20 minutes)*

**Presenter:** SCHMOOKLER, Barak (UC Riverside)

**Session Classification:** Thursday Afternoon

Contribution ID: 22

Type: **not specified**

## Parasitic test of Insert Prototype in the STAR Hall

*Friday, 1 March 2024 09:00 (20 minutes)*

**Presenter:** PREINS, Sean (University of California, Riverside)

**Session Classification:** Friday Morning

Contribution ID: 23

Type: **not specified**

## **Installation of prototype in STAR Hall, and hodoscope tracking**

*Friday, 1 March 2024 09:20 (20 minutes)*

**Presenter:** CARNEY, Peter (Univeristy of California, Riverside)

**Session Classification:** Friday Morning

Contribution ID: 24

Type: **not specified**

## Simulations for test at STAR Hall

*Friday, 1 March 2024 09:40 (20 minutes)*

**Presenter:** ZHANG, Weibin (UC Riverside)

**Session Classification:** Friday Morning

Contribution ID: 25

Type: **not specified**

## Reconstruction of Nuclear Fragments at IP8

*Friday, 1 March 2024 11:45 (20 minutes)*

**Presenter:** HUANG, JiaJun (Student@ucr.edu)

**Session Classification:** Friday Morning

Contribution ID: 26

Type: **not specified**

## Closing Remarks

*Friday, 1 March 2024 12:05 (10 minutes)*

**Presenter:** ARRATIA, Miguel (University of California, Riverside)



Contribution ID: 27

Type: **not specified**

## Studies of scintillator tiles with cosmic rays

*Friday, 1 March 2024 10:00 (15 minutes)*

**Presenter:** MACIAS, Mia

**Session Classification:** Friday Morning

Contribution ID: 29

Type: **not specified**

## Minimum-Ionizing Particle (MIP) Analysis Results

*Friday, 1 March 2024 10:45 (15 minutes)*

**Presenter:** OWEN, Chase (UC Riverside)

**Session Classification:** Friday Morning