

Forward Physics and QCD at the LHC and EIC

798. WE-Heraeus-Seminar

23 – 27 October 2023

at the Physikzentrum Bad Honnef, Germany

**WILHELM UND ELSE
HERAEUS-STIFTUNG**



Program

Monday, 23 October 2023

11:00 – 14:00	Registration	
12:30	<i>LUNCH</i>	
14:00 – 14:10	Scientific organizers	Welcome, introductions
14:10 – 14:50	Raju Venugopalan	What's big about small x
14:50 – 15:30	Peter Jacobs	Overview of forward physics at the LHC
15:30 – 16:10	Silvia dalla Torre	The EIC project and the ePIC experiment
16:10 – 16:35	<i>COFFEE BREAK</i>	

PROTON/NUCLEAR TOMOGRAPHY, DPS, GPDS, TMDS

16:35 – 17:10	Emanuele Nocera	The collinear parton distributions of the proton: Achievements and open issues
17:10 – 17:45	Tomas Jezo	Nuclear PDF updates from nCTEQ
17:45 – 18:20	Katarzyna Wichmann	Proton structure and HERA data
18:20 – 18:55	Amanda Cooper-Sarkar	PDFs from LHC data
19:00	<i>DINNER</i>	

Program

Tuesday, 24 October 2023

08:00 *BREAKFAST*

PROTON/NUCLEAR TOMOGRAPHY, DPS, GPDS, TMDS

09:00 – 09:35 Jonathan Gaunt **Information on double-parton scattering from forward physics measurements**

09:35 – 10:10 Valerio Bertone **3D proton structure in momentum space from current and future forward-physics measurements**

10:10 – 10:45 Daria Sokhan **GPDS and TMDs at the electron-ion collider**

10:45 – 11:15 *COFFEE BREAK*

11:15 – 11:50 Charlotte van Hulse **Proton structure and tomography in fixed-target DIS experiments**

11:50 – 12:15 **Discussion**

12:15 – 12:25 **Conference photo** (in the front of the lecture hall)

12:30 *LUNCH*

Program

Tuesday, 24 October 2023

LOW X, SATURATION

14:00 – 14:35	Edmond Iancu	Probing gluon saturation via photon-hadron interactions at high energies
14:35 – 15:10	Agustín Sabio Vera	The fine print of BFKL dynamics
15:10 – 15:45	Nestor Armesto	The color glass condensate and forward physics at the LHC and EIC
15:45 – 16:10	<i>COFFEE BREAK</i>	
16:10 – 16:45	Paul Newman	Low x physics at ep and pp Colliders
16:45 – 17:20	Orlando Villalobos Baillie	Low-x structure functions and nuclear shadowing in heavy ion collisions

Poster flash talks I

17:20 – 17:30	Thomas Cridge	MSHT parton distribution function review and recent updates
17:30 – 17:40	Pit Duwentäster	Global fits of proton PDFs with non-linear corrections
17:40 – 17:50	Stephen Maple	Kinematic fitting for inclusive physics with ePIC at the Electron Ion Collider
17:50 – 18:00	Zuhal Seyma Demiroglu	Extraction of the strong coupling with HERA and EIC inclusive data
18:00 – 18:10	Francesco Giuli	Impact of inclusive Electron Ion Collider data on collinear parton distributions

Program

Tuesday, 24 October 2023

Poster flash talks I

18:10 – 18:20	Alexander Neuwirth	Prompt photon production with up to three jets in POWHEG
18:20 – 18:30	Florian Jonas	Measuring prompt photon production with the ALICE Forward Calorimeter (FoCal) upgrade
18:30 – 18:40	Yair Mulin	Next-to-leading order photon+jet production
18:40 – 18:50	Yossathorn Tawabutr	Complete NLO calculation of forward single-inclusive hadron production in pA collisions
18:50 – 19:00	Oscar Garcia-Montero	The McDIPPER: A novel saturation-based 3D initial state model for heavy-ion collisions
19:00	<i>DINNER</i>	

Program

Wednesday, 25 October 2023

08:00 *BREAKFAST*

TOTAL CROSS SECTIONS, ODDERONS, DIFFRACTION

09:00 – 09:35	Antoni Szczurek	Diffraction single and double bremsstrahlung at the LHC within tensor pomeron model
09:35 – 10:10	Vadim Guzey	Exclusive quarkonium photoproduction
10:10 – 10:45	Alexander Jentsch	Exclusive and diffractive physics at the electron-ion collider
10:45 – 11:10	<i>COFFEE BREAK</i>	
11:10 – 11:45	Kenneth Österberg	TOTEM experiment: Pomeron and odderon exchange at LHC energies
11:45 – 12:20	Lydia Beresford	Diffraction, elastic and total cross section physics at ATLAS
12:20 – 12:55	Andrea Bellora	The CMS precision proton spectrometer: Recent results and status
12:55	<i>LUNCH</i>	
14:00 – 14:35	Daniel Tapia Takaki	tba
14:35 – 15:10	Ronan McNulty	Diffraction physics at LHCb
15:10 – 15:40	Discussion	
15:40 – 16:10	<i>COFFEE BREAK</i>	

Program

Wednesday, 25 October 2023

Poster flash talks II

16:10 – 16:20	Parker Gardner	Observation of enhanced long-range elliptic anisotropies inside high-multiplicity jets in pp collisions at the LHC
16:20 – 16:30	Saray Arteaga Escatel	Forward jets measurements in proton-lead collisions at CMS
16:30 – 16:40	Sergio Javier Arbiol Val	Studies of the LHC optics at point 1 and hard diffractive programme
16:40 – 16:50	Josh Lomas	Designing silicon tracking detectors for high radiation environments
16:50 – 17:00	Maciej Trzebinski	Overview of ATLAS Roman Pot Detectors: Current status and future perspectives
17:00 – 17:10	Maciej Lewicki	Feasibility and discovery potential of diffractive charm production measurement with the ATLAS Forward Proton Detectors
17:10 – 17:20	Savannah Clawson	Performance of the ATLAS forward proton detector
17:20 – 17:30	Kate Lynch	Inclusive quarkonium photoproduction at the LHC via ultra-peripheral collisions
17:30 – 17:40	Luis Fernando Alcerro Alcerro	Probing the gluonic structure of nuclei in ultraperipheral PbPb collisions via vector meson photoproduction with the CMS experiment

Program

Wednesday, 25 October 2023

Poster flash talks II

17:40 – 17:50	Simone Ragoni	Studying photonuclear cross sections with UPCs in ALICE
17:50 – 18:00	Anisa Khatun	Physics prospects and data preparation for UPC studies with ALICE in Run 3
18:00 – 18:10	Rainer Schicker	Summary EMMI workshop on "Forward Physics in ALICE 3"
18:10 – 18:20	Maura Barros	Search for new physics at the LHC using the missing mass method
18:30 – 19:30	Poster session	
19:30	<i>DINNER</i>	

Program

Thursday, 26 October 2023

08:00 *BREAKFAST*

BSM, EXCLUSIVE, PHOTON-PHOTON, LONG-LIVED

09:00 – 09:35 Lucien Harland-Lang **Theory overview of photon-initiated production at the LHC**

09:35 – 10:10 Christophe Royon **Photon-photon physics at the LHC in pp collisions**

10:10 – 10:45 Brian Cole **Probing nuclear parton distributions with jet measurements in ultra-peripheral Pb+Pb collisions**

10:45 – 11:20 *COFFEE BREAK*

11:20 – 11:55 Florian Bernlochner **tba**

11:55 – 12:30 Tao Han **BSM physics at the EIC**

12:30 – 13:00 **Discussion**

13:00 *LUNCH*

14:30 – 19:00 **Excursion**

19:00 *HERAEUS DINNER*
(social event with cold & warm buffet with complimentary drinks)

Program

Friday, 27 October 2023

08:00 *BREAKFAST*

COSMIC RAYS

09:00 – 09:35 Maria-Vittoria Garzelli **LHC/EIC impact on cosmic ray physics**

09:35 – 10:10 Tanguy Pierog **QCD challenges in air shower measurements**

SUMMARY

10:10 – 10:45 Michael Klasen **Summary**

10:45 – 11:15 *COFFEE BREAK*

11:15 – 11:45 **Dicussion**

11:45– 12:00 Scientific organizers **Poster prizes & closing words**

12:00 *LUNCH*

End of the seminar and departure

NO DINNER for participants leaving on Saturday; however, a self-service breakfast will be provided on Saturday morning