High energy probes of the initial stages

Report of Contributions

https://indico.cern.ch/e/1487879

Contribution ID: **11** Type: **not specified**

Welcome

Monday 31 March 2025 08:45 (15 minutes)

Author: LOURENCO HENRIQUES BARATA, Joao

Presenter: LOURENCO HENRIQUES BARATA, Joao

Contribution ID: **12** Type: **not specified**

Jets as probes of the initial stages

Monday 31 March 2025 09:00 (45 minutes)

Author: APOLINARIO, Liliana (LIP (PT))

Presenter: APOLINARIO, Liliana (LIP (PT))

Session Classification: Session

Contribution ID: **13** Type: **not specified**

Jet quenching in the initial stages of HICs

Monday 31 March 2025 09:45 (45 minutes)

Author: MAYO LÓPEZ, Xoán (Universidade de Santiago de Compostela - IGFAE)

Presenter: MAYO LÓPEZ, Xoán (Universidade de Santiago de Compostela - IGFAE)

Session Classification: Session

Contribution ID: **14** Type: **not specified**

From momentum broadening in a 2+1D Glasma background towards 3+1D: exploring the dilute approximation and machine learning

Tuesday 1 April 2025 14:30 (45 minutes)

Author: IPP, Andreas

Presenter: IPP, Andreas

Session Classification: Session

Contribution ID: **15** Type: **not specified**

Transport of heavy quarks and jets in the glasma pre-equilibrium stage

Monday 31 March 2025 11:45 (45 minutes)

Author: AVRAMESCU, Dana (University of Jyväskylä)

Presenter: AVRAMESCU, Dana (University of Jyväskylä)

Session Classification: Session

Contribution ID: **16** Type: **not specified**

Jet-quenching parameter during Bottom-up

Monday 31 March 2025 14:30 (45 minutes)

Author: KURKELA, Eero Aleksi

Presenter: KURKELA, Eero Aleksi

Session Classification: Session

Contribution ID: **17** Type: **not specified**

How jets broaden and lose energy during the initial stages

Monday 31 March 2025 15:15 (45 minutes)

Author: LINDENBAUER, Florian (TU Wien)

Presenter: LINDENBAUER, Florian (TU Wien)

Session Classification: Session

Contribution ID: **18** Type: **not specified**

Jet quenching in glasma

Tuesday 1 April 2025 09:00 (45 minutes)

Author: MROWCZYNSKI, Stanislaw (National Centre for Nuclear Research, Warsaw, Poland)

Presenter: MROWCZYNSKI, Stanislaw (National Centre for Nuclear Research, Warsaw, Poland)

Session Classification: Session

Contribution ID: **19** Type: **not specified**

Adiabatically understanding pre-hydrodynamic and hydrodynamizing attractors

Wednesday 2 April 2025 09:00 (45 minutes)

Author: STEINHORST, Rachel (Massachusetts Institute of Technology)

Presenter: STEINHORST, Rachel (Massachusetts Institute of Technology)

Session Classification: Session

Contribution ID: **20** Type: **not specified**

Leveraging the gluon splitting to heavy quarks for phenomenology

Friday 4 April 2025 12:30 (45 minutes)

Author: BREWER, Jasmine Therese (University of Oxford (GB))

Presenter: BREWER, Jasmine Therese (University of Oxford (GB))

Session Classification: Session

Contribution ID: **21** Type: **not specified**

Minijet equilibration from $\hat{q}$

Tuesday 1 April 2025 12:30 (30 minutes)

Author: ZHOU, Luyao Fabian (ITP Heidelberg)

Presenter: ZHOU, Luyao Fabian (ITP Heidelberg)

Session Classification: Session

Contribution ID: **22** Type: **not specified**

Non-local high- p_t transport in anisotropic QCD matter

Friday 4 April 2025 11:00 (45 minutes)

Author: Dr DU, Xiaojian (Galician Institute of High-Energy Physics (IGFAE))

Presenter: Dr DU, Xiaojian (Galician Institute of High-Energy Physics (IGFAE))

Session Classification: Session

Contribution ID: **23** Type: **not specified**

Heavy flavor observables as a probe of the Glasma and the early magnetic field

Tuesday 1 April 2025 15:15 (45 minutes)

Author: GRECO, Vincenzo

Presenter: GRECO, Vincenzo

Session Classification: Session

Contribution ID: **24** Type: **not specified**

Far from equilibrium counterparts of near equilibrium phenomena

Tuesday 1 April 2025 09:45 (45 minutes)

Author: HELLER, Michal

Presenter: HELLER, Michal

Session Classification: Session

Contribution ID: **25** Type: **not specified**

Dynamics of Heavy Quarks in Hot Yang-Mills Plasmas: lessons from strongly coupled N=4 SYM

Wednesday 2 April 2025 09:45 (45 minutes)

Author: SCHEIHING, Bruno (KITP, University of California, Santa Barbara)

Presenter: SCHEIHING, Bruno (KITP, University of California, Santa Barbara)

Session Classification: Session

Contribution ID: **26** Type: **not specified**

EFT approach to jet observables in heavy ion collisions

Wednesday 2 April 2025 11:00 (45 minutes)

Author: Dr MEHTAR-TANI, Yacine (Brookhaven National Laboratory)

Presenter: Dr MEHTAR-TANI, Yacine (Brookhaven National Laboratory)

Session Classification: Session

Contribution ID: **27** Type: **not specified**

Jet modification in cold and hot QCD medium

Wednesday 2 April 2025 11:45 (45 minutes)

Author: Dr WANG, Xin-Nian (Lawrence Berkeley National Lab. (US))

Presenter: Dr WANG, Xin-Nian (Lawrence Berkeley National Lab. (US))

Session Classification: Session

Contribution ID: **28** Type: **not specified**

Exploring anisotropic QCD matter with jets

Wednesday 2 April 2025 12:30 (30 minutes)

Author: MARTINS DA SILVA, João (LIP - Lisboa / ULisboa - IST)

Presenter: MARTINS DA SILVA, João (LIP - Lisboa / ULisboa - IST)

Session Classification: Session

Contribution ID: **29** Type: **not specified**

An EEC Way to Image Elastic Scatterings and Jet Wakes in QGP

Wednesday 2 April 2025 15:30 (15 minutes)

Authors: KUDINOOR, Arjun Srinivasan (Massachusetts Institute of Technology); Dr PABLOS, Daniel (INFN Torino); RAJAGOPAL, Krishna (Massachusetts Inst. of Technology (US))

Presenter: KUDINOOR, Arjun Srinivasan (Massachusetts Institute of Technology)

Session Classification: Session

Contribution ID: **30** Type: **not specified**

Study of Heavy Quark Momentum Broadening in a Non-Abelian Plasma in- and out-of-equilibrium

Wednesday 2 April 2025 15:45 (15 minutes)

Author: PANDEY, Harshit (The Institute of Mathematical Sciences, Chennai, India)

Co-authors: SHARMA, Sayantan (IMSc); Prof. SCHLICHTING, Soeren (Universität Bielefeld)

Presenter: PANDEY, Harshit (The Institute of Mathematical Sciences, Chennai, India)

Session Classification: Session

Contribution ID: **31** Type: **not specified**

Heavy Quark Hadron RAA and v2 in the Hybrid Model with Coalescence

Wednesday 2 April 2025 16:00 (15 minutes)

Authors: BERAUDO, Andrea (INFN, sezione di Torino (IT)); Dr PABLOS, Daniel (INFN Torino); DU PLESSIS, Jean; RAJAGOPAL, Krishna (Massachusetts Inst. of Technology (US))

Presenter: DU PLESSIS, Jean

Session Classification: Session

Contribution ID: **32** Type: **not specified**

Initial stage jet momentum broadening in a Light-Front Hamiltonian approach

Wednesday 2 April 2025 16:15 (15 minutes)

We study the momentum broadening of a high energy quark jet in the high-density gluon medium created right after the collision of two ultrarrelativistic heavy nuclei, the Glasma. Previous Glasma studies consider the jet as a classical probe particle, for which position and momentum are simultaneously determined. In this talk, we use the light-front QCD Hamiltonian formalism to treat the jet as a fully quantum state and compute its real-time evolution while propagating through the Glasma classical background fields, that appear as an interaction potential in the quantum evolution of the jet. We present results for the momentum broadening and jet quenching parameter, $\hat{q}$, experimented by a jet at mid-rapidity, paying special attention to the anisotropies in the momentum broadening between the longitudinal and transverse directions with respect to the collision axis. We enphasize the similarities and differences with the classical calculations that have been carried out so far.

Author: LAMAS, Carlos (IGFAE-USC)

Presenter: LAMAS, Carlos (IGFAE-USC)

Session Classification: Session

Contribution ID: **33** Type: **not specified**

Recent highly-differential measurements examining jet quenching

Thursday 3 April 2025 09:00 (45 minutes)

Author: BATY, Austin Alan (University of Illinois Chicago)

Presenter: BATY, Austin Alan (University of Illinois Chicago)

Session Classification: Session

Contribution ID: **34** Type: **not specified**

Probing the early stages of jet evolution with substructure

Thursday 3 April 2025 09:45 (45 minutes)

Author: CUNQUEIRO MENDEZ, Leticia (Roma Sapienza University)

Presenter: CUNQUEIRO MENDEZ, Leticia (Roma Sapienza University)

Session Classification: Session

Contribution ID: **35** Type: **not specified**

Hard/Soft Correlations in Small Systems

Thursday 3 April 2025 11:00 (45 minutes)

Author: SOUDI, Ismail (University of Jyvaskyla)

Presenter: SOUDI, Ismail (University of Jyvaskyla)

Session Classification: Session

Contribution ID: **36** Type: **not specified**

Going against the flow: Revealing the QCD degrees of freedom in hadronic collisions

Thursday 3 April 2025 11:45 (45 minutes)

Author: TÖRNKVIST, Robin (Universidade de Santiago de Compostela - IGFAE)

Presenter: TÖRNKVIST, Robin (Universidade de Santiago de Compostela - IGFAE)

Session Classification: Session

Contribution ID: **37** Type: **not specified**

Unveiling imprint of early dynamics in jet quenching

Thursday 3 April 2025 12:30 (45 minutes)

Author: ADHYA, Souvik Priyam (Institute of Physics of the Czech Academy of Sciences)

Presenter: ADHYA, Souvik Priyam (Institute of Physics of the Czech Academy of Sciences)

Session Classification: Session

Contribution ID: **38** Type: **not specified**

Heavy flavor experiment [Online]

Thursday 3 April 2025 14:30 (45 minutes)

Author: LIU, Ming Xiong (Los Alamos National Laboratory)

Presenter: LIU, Ming Xiong (Los Alamos National Laboratory)

Session Classification: Session

Contribution ID: **39** Type: **not specified**

Jet modifications from colour reconnections

Thursday 3 April 2025 15:15 (45 minutes)

Author: LÖNNBLAD, Leif (Lund University (SE))

Presenter: LÖNNBLAD, Leif (Lund University (SE))

Session Classification: Session

Contribution ID: **40** Type: **not specified**

Understanding chiral plasma instabilities and approach to thermalization in non-Abelian gauge theories

Friday 4 April 2025 09:00 (45 minutes)

Author: SHARMA, Sayantan (IMSc)

Presenter: SHARMA, Sayantan (IMSc)

Session Classification: Session

Contribution ID: **41** Type: **not specified**

An electromagnetic phenomenology of the early stages

Friday 4 April 2025 09:45 (45 minutes)

Author: GARCIA-MONTERO, Oscar

Presenter: GARCIA-MONTERO, Oscar

Session Classification: Session

Contribution ID: **42** Type: **not specified**

Attenuation of jet partons and heavy quarks in strongly interacting QGP

Tuesday 1 April 2025 11:00 (45 minutes)

Author: BRATKOVSKAYA, Elena (GSI, Darmstadt)

Presenter: BRATKOVSKAYA, Elena (GSI, Darmstadt)

Session Classification: Session

Contribution ID: **43** Type: **not specified**

Heavy quarks and quarkonia in the early stage of pA collisions

Monday 31 March 2025 11:00 (45 minutes)

Author: RUGGIERI, Marco

Presenter: RUGGIERI, Marco

Session Classification: Session

Contribution ID: **44** Type: **not specified**

Jets with preequilibrium quenching

Tuesday 1 April 2025 11:45 (45 minutes)

Author: TAKACS, Adam (Heidelberg University)

Presenter: TAKACS, Adam (Heidelberg University)

Session Classification: Session

Contribution ID: **45** Type: **not specified**

Quark production in the bottom-up thermalization

Friday 4 April 2025 11:45 (45 minutes)

Author: BARRERA CABODEVILA, Sergio (Instituto Galego de Física de Altas Enerxías - Universidade de Santiago de Compostela)

Presenter: BARRERA CABODEVILA, Sergio (Instituto Galego de Física de Altas Enerxías - Universidade de Santiago de Compostela)

Session Classification: Session

Contribution ID: **46** Type: **not specified**

Concluding remarks

Friday 4 April 2025 13:15 (15 minutes)

Author: SALGADO LOPEZ, Carlos Albert (Universidade de Santiago de Compostela (ES))

Presenter: SALGADO LOPEZ, Carlos Albert (Universidade de Santiago de Compostela (ES))

Contribution ID: **47** Type: **not specified**

High-energy probes of the initial stages in heavy-ion collisions

Wednesday 2 April 2025 14:00 (1 hour)

The matter produced in heavy-ion collisions undergoes a multiphase evolution, providing unique access to a variety of QCD matter properties. Hard probes, which penetrate the medium and carry away imprints of different phases, serve as a key tool for studying this evolution. While their interaction with the medium in the very first moments after a collision was historically assumed to be negligible, recent studies suggest otherwise. In this talk, I will review how hard probes interact with nuclear matter from the earliest stages of a heavy-ion collision onward. Using jets as an example, I will discuss how they lose energy and how their substructure is modified during the pre-equilibrium phases, comparing these effects with their interactions in the later quark-gluon plasma stage. Understanding these early-time interactions provides new insights into the thermalization process and the microscopic structure of the QCD medium.

Presenter: SADOFYEV, Andrey (LIP, Lisbon)

Session Classification: TH Colloquium

Contribution ID: **48** Type: **not specified**

Discussion 1: Panel discussion

Monday 31 March 2025 16:30 (1 hour)

Session Classification: Discussion

Contribution ID: **49** Type: **not specified**

Discussion 2: Theory not fully developed? Not sufficient computing power? Difficult way from the glasma to the detector? What do we have to do?

Tuesday 1 April 2025 16:30 (1 hour)

Session Classification: Discussion

Contribution ID: **50** Type: **not specified**

Discussion 3

Thursday 3 April 2025 16:30 (1 hour)

Session Classification: Discussion