INT Program

Precision QCD with the Electron-Ion Collider

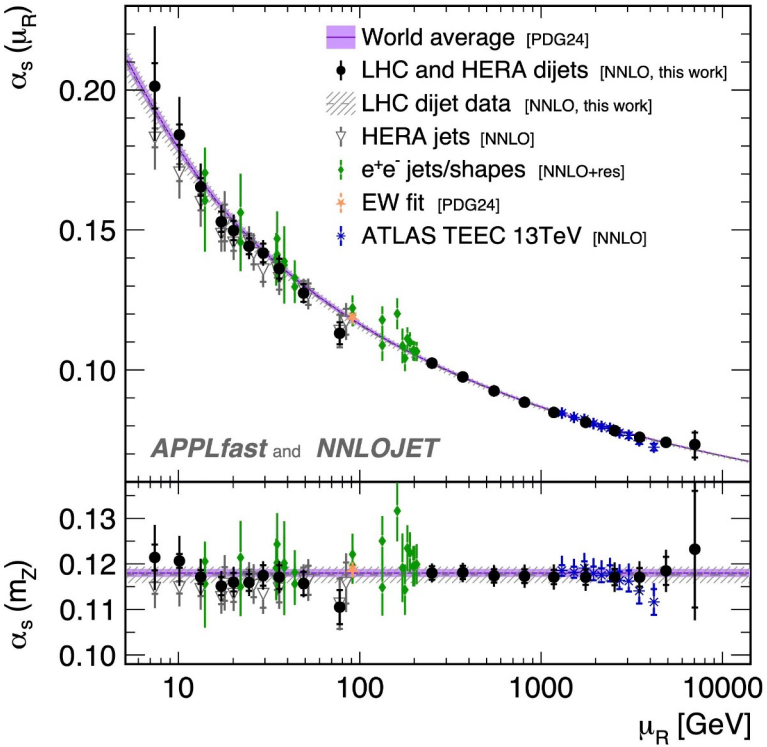
Participant Introductions

Thomas Gehrmann (Universität Zürich)

Research interests: Precision calculations, amplitudes, collider phenomenology

As seen on arXiv:

- Precise Determination of the Strong Coupling Constant from Dijet Cross Sections up to the Multi-TeV Range, 2412.21165
- Identified Hadron Production in Deeply Inelastic Neutrino-Nucleon Scattering, 2504.05376

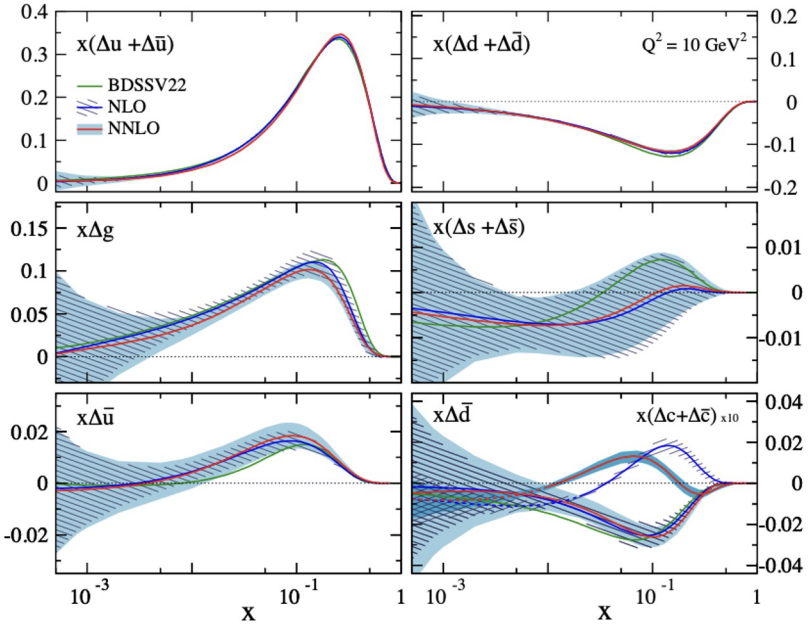


Daniel de Florian (Universidad de San Martín)

Research interests: QCD corrections, polarized parton distributions

As seen on arXiv:

- Next-to-Next-to-Leading Order Global Analysis of Polarized Parton Distribution Functions, 2407.11635
- NNLO jet production in neutral and charged current polarized deep inelastic scattering, 2212.06625

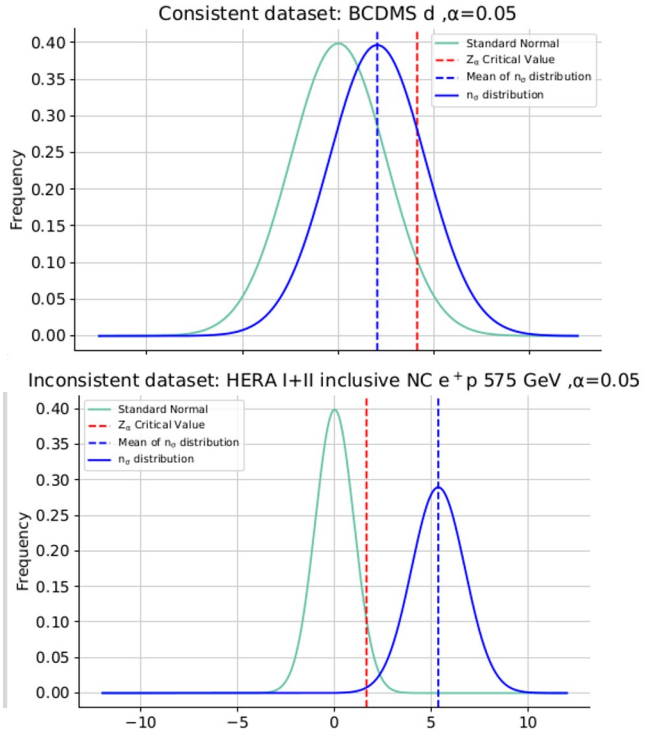


Stefano Forte (Università di Milano and INFN)

Research interests: QCD resummation, parton distributions, machine learning in HEP

As seen on arXiv:

- The path to N3LO parton distributions, 2402.18635
- Threshold resummation of transverse momentum distributions beyond next-to-leading log 2106.11321

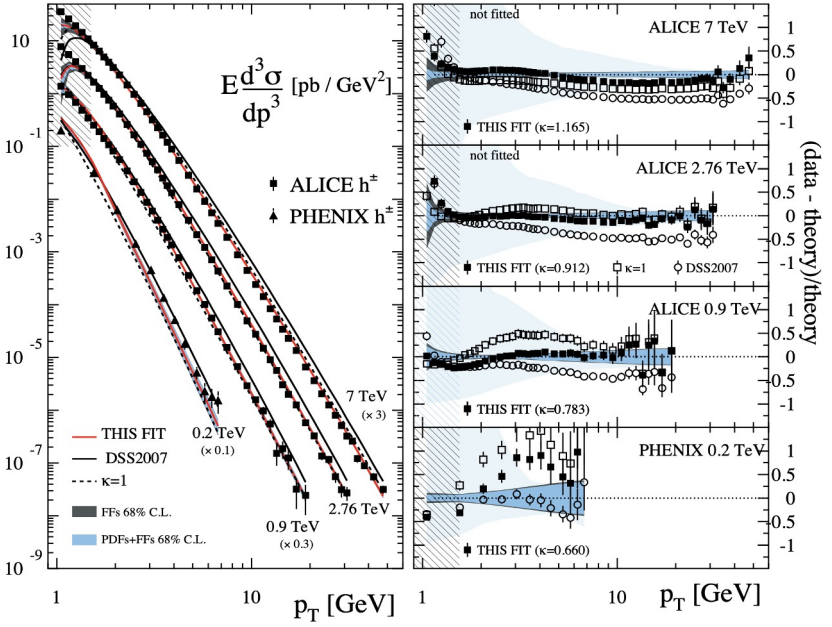


Rodolfo Sassot (Universidad de Buenos Aires)

Research interests: Fragmentation functions, polarized parton distributions.

As seen on arXiv:

- Next-to-Next-to-Leading Order Global Analysis of Polarized Parton Distribution Functions, 2407.11635
- Charged hadron fragmentation functions at high energy colliders, 2023.17768

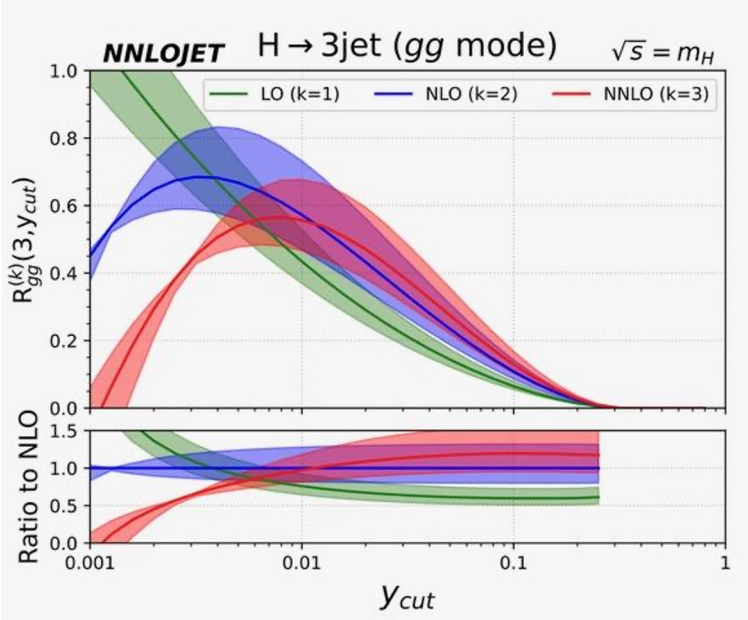


Aude Gehrmann-De Ridder (ETH Zürich)

Research interests: Precision computations in perturbative QCD and their applications to collider phenomenology

As seen on arXiv:

- Jet rates in Higgs boson decay at third order in QCD, 2502.17333
- QCD predictions for vector boson plus hadron production at the LHC, 2405.17540

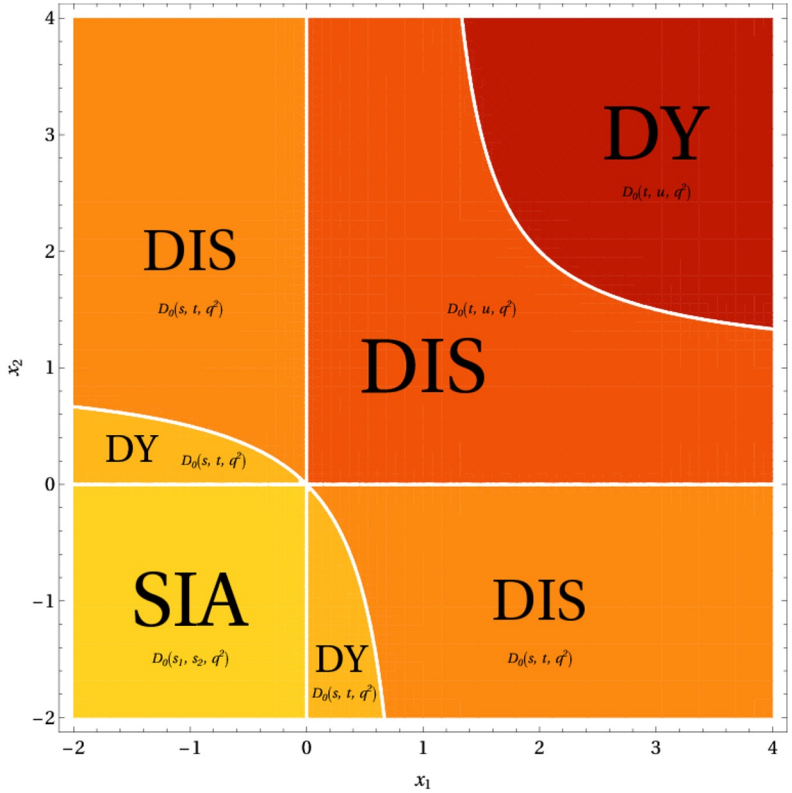


Juliane Haug (Universität Tübingen)

Research interests: SIDIS, precision calculations, parton evolution

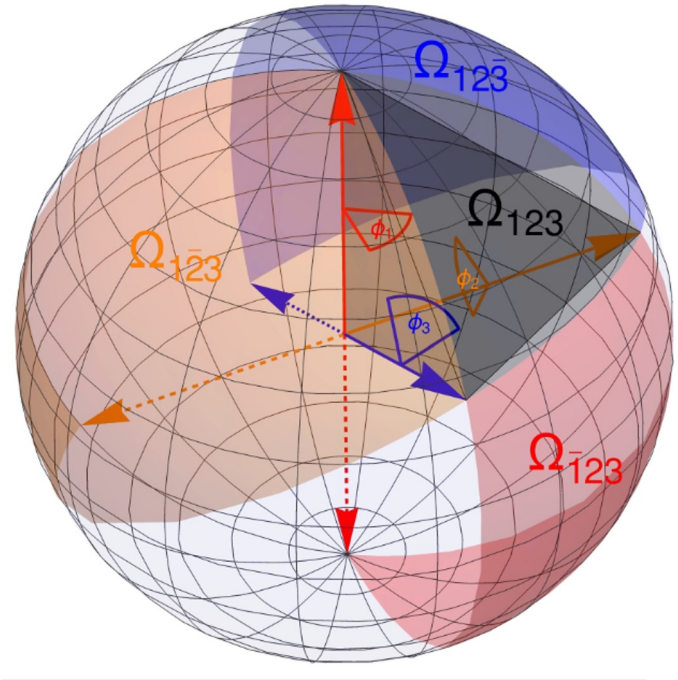
As seen on arXiv:

- A semi-analytical x-space solution for parton evolution – Application to non-singlet and singlet DGLAP equation, 2404.18667
- The massless single off-shell scalar box integral – branch cut structure and all-order epsilon expansion, 2211.14110



Fabian Wunder (Universität Tübingen)

Research interests: Precision calculations in pQCD, parton evolution



As seen on arXiv:

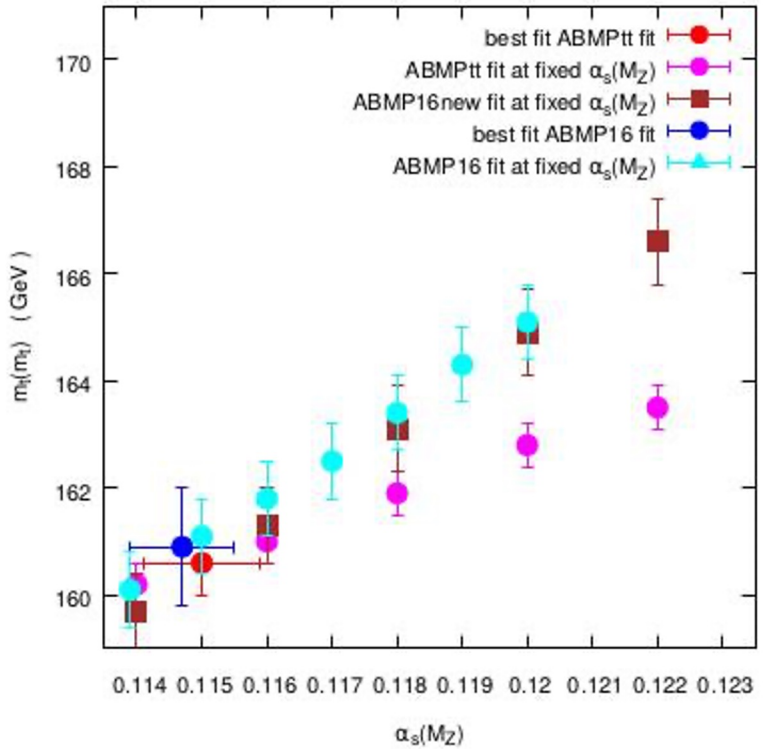
- Angular integrals with three denominators via IBP, mass reduction, dimensional shift, and differential equations, 2410.18177
- Expansion by regions meets angular integrals, 2405.13120

Sven-Olaf Moch (University of Hamburg)

Research interests: QCD precision calculations for colliders, top-quark physics, parton distribution functions, computer algebra, mathematics of Feynman

As seen on arXiv:

- NNLO PDFs driven by top-quark data, 2407.00545
- Four-loop splitting functions in QCD – the gluon-gluon case – 2410.08089

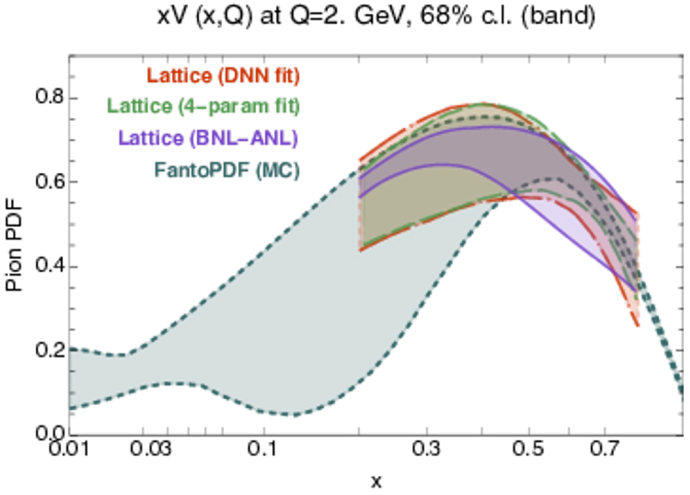


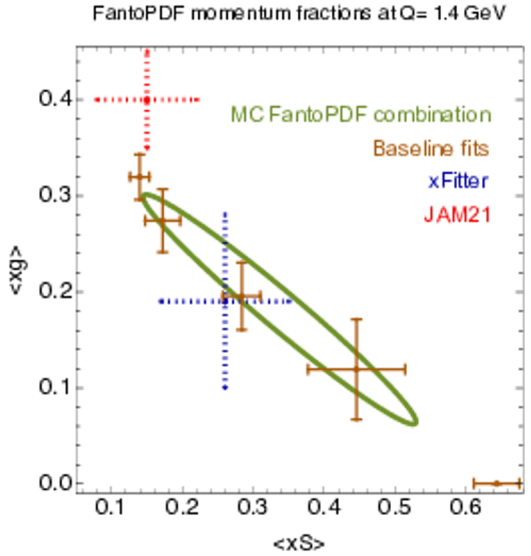
Pavel Nadolsky
(Michigan State University)

Research interests: Parton distributions, heavy-quark calculations, resummations, uncertainty quantification

As seen on arXiv:

- Polynomial universal approximators for pion and other PDFs, 2311.08447, 2505.XXXXX
- SACOT-MPS heavy-quark scheme for ZQ and other pp processes at (N)NLO, 2410.03876



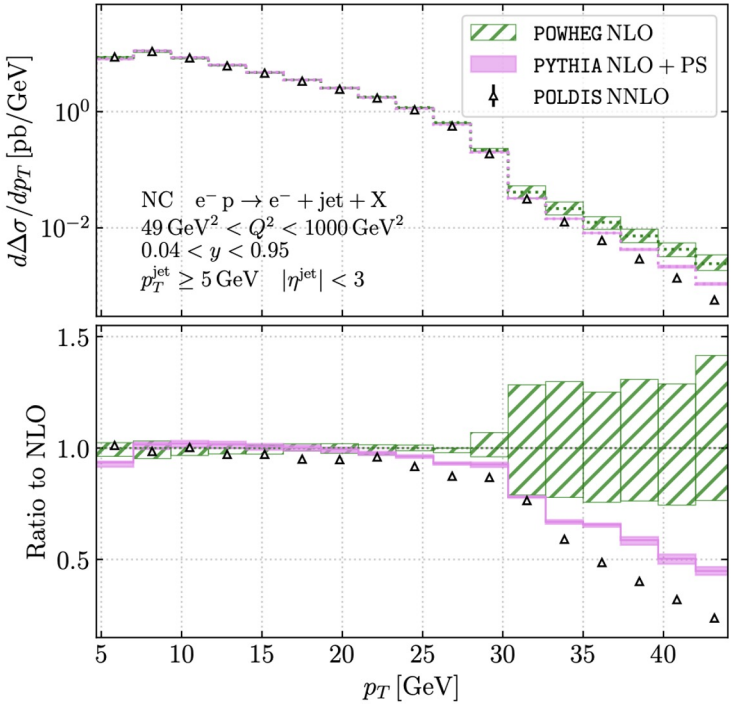


Ignacio Borsa (Universität Tübingen)

Research interests: Precision calculations in QCD, polarized parton distributions, fragmentation functions.

As seen on arXiv:

- NNLO Global Analysis of Polarized Parton Distribution Functions, 2407.11635
- Parton-shower effects in polarized deep inelastic scattering, 2404.07702

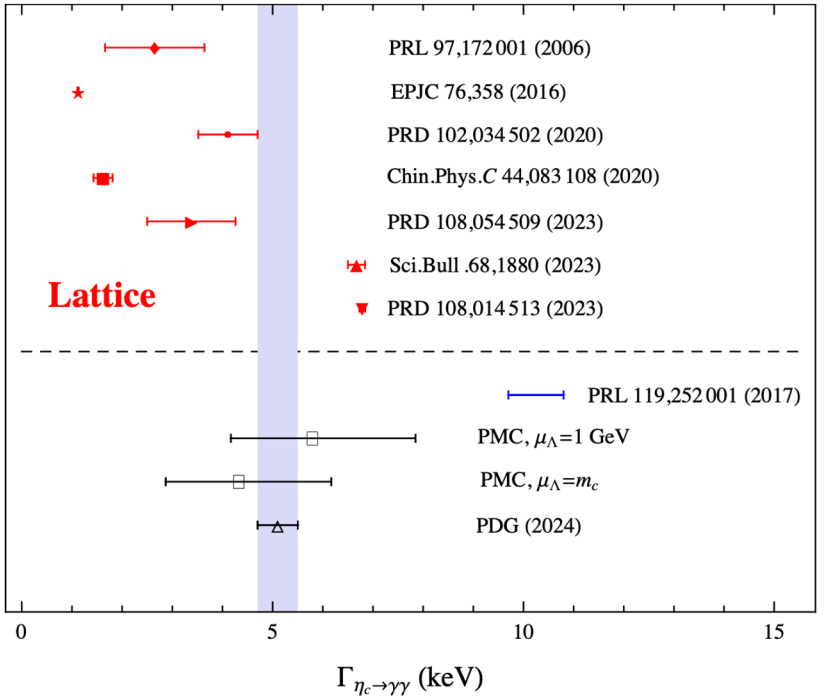


Leonardo Di Giustino (University of Insubria)

Research interests: High precision QCD, Elimination of the renormalization scale and scheme ambiguities, Resummation.

As seen on arXiv:

- A novel and self-consistent analysis for the ηc → γγ process, 2501.17681
- Scheme-independent determination of the QCD running coupling at all scales from jet observables using the PMC∞, 2407.08570

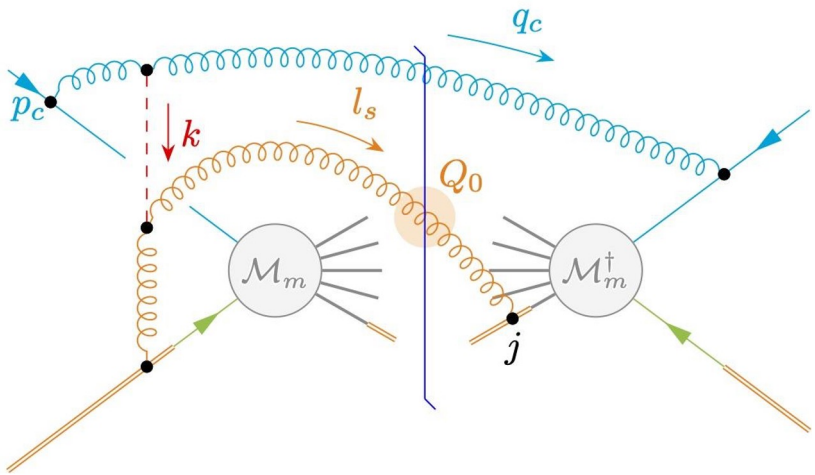


Matthias Neubert (Johannes Gutenberg University)

Research interests: Effective field theories including SCET, precision calculations, collider phenomenology

As seen on arXiv:

- Factorization restoration through Glauber gluons, 2408.10308
- Factorization of non-global LHC observables and resummation of super-leading logarithms, 2307.06359

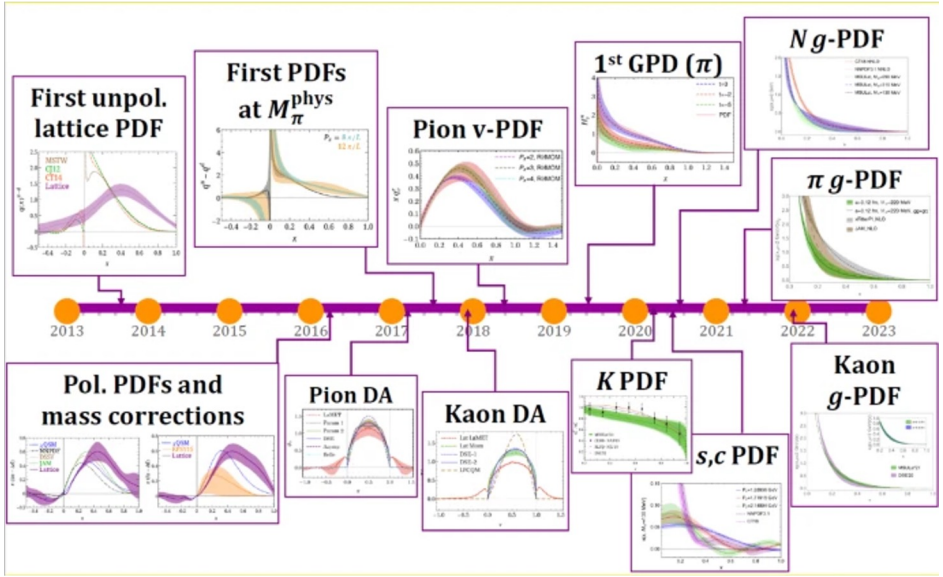


Huey-Wen Lin (Michigan State University)

Research interests: unpolarized and polarized parton distributions, Lattice QCD, Precision nucleon couplings/charges

As seen on arXiv:

- Overview of Lattice Results for Hadron Structure,
  Few Body Syst. 64 (2023) 3, 58
- Flavor diagonal nucleon charges using clover fermions on MILC HISQ ensembles, 2008.12474

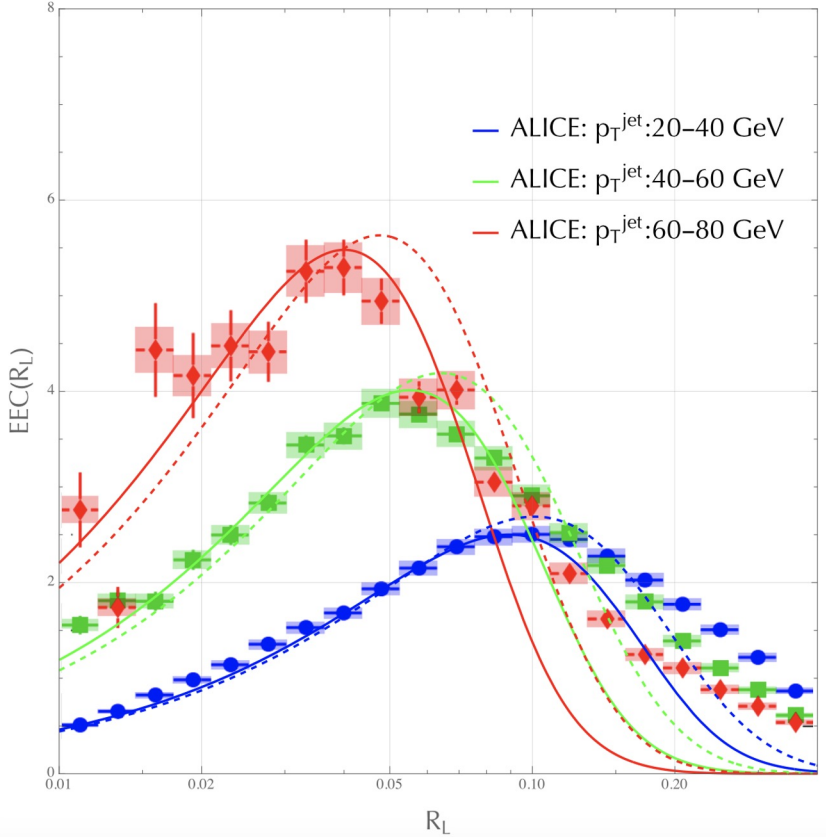


Feng Yuan (Lawrence Berkeley Lab)

Research interests: TMDs, GPDs, proton spin, small-x physics

As seen on arXiv:

- Universality in the Near-Side Energy-Energy Correlator, Xiaohui Liu, Werner Vogelsang, Feng Yuan, and Hua Xing Zhu, 2410.16371
- Jet Definition and Transverse-Momentum-Dependent Factorization in Semi-Inclusive Deep-Inelastic Scattering, 2408.03129

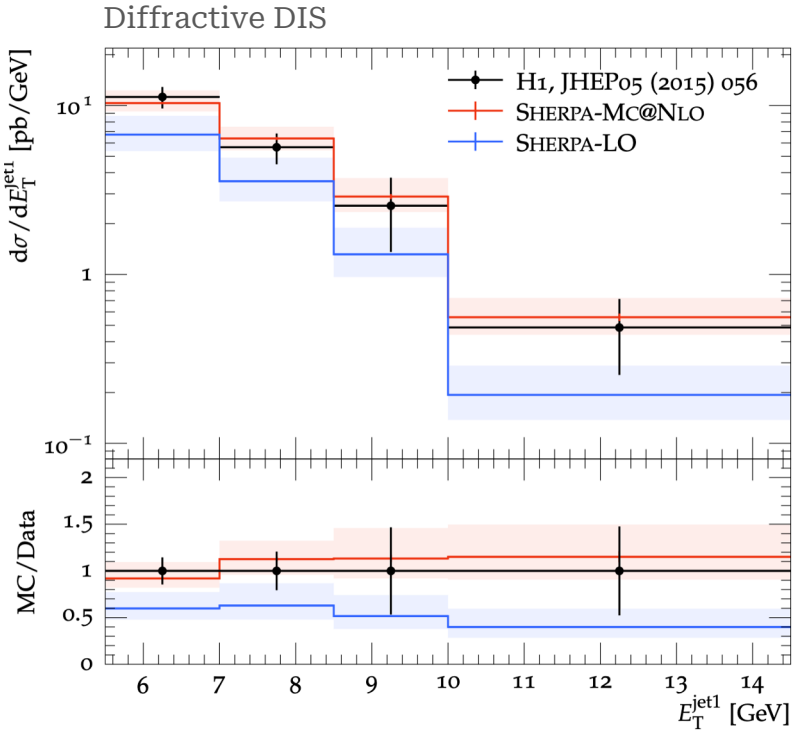


Peter Meinzinger (Universität Zürich)

Research interests: Collider phenomenology, precision calculations, event generation

As seen on arXiv:

- Hard Diffraction in Sherpa, 2407.02133
- Hadron-level NLO predictions for QCD observables in photo-production at the Electron-Ion Collider, 2311.14571

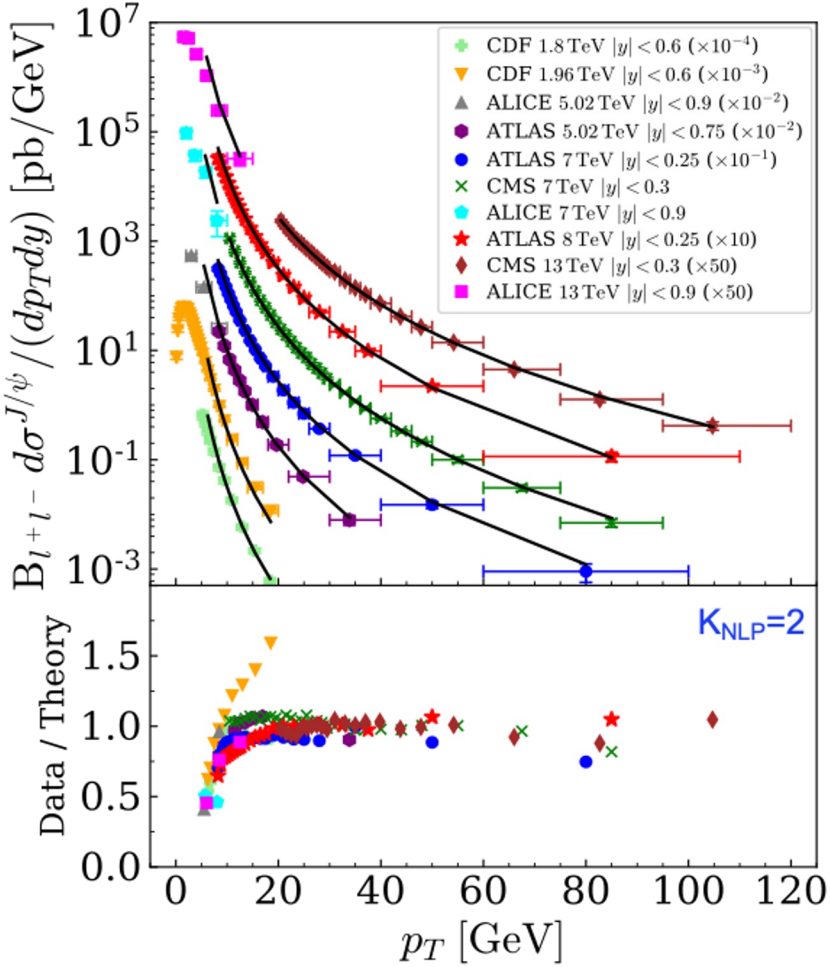


Jianwei Qiu (Jefferson Lab)

Research interests: Factorization, Quarkonium, TMDs, and GPDs

As seen on arXiv:

- Subleading power corrections to heavy quarkonium production in QCD factorization approach, 2211.12648
- Factorized QED Contribution to Lepton-Hadron DIS, 2408.08377

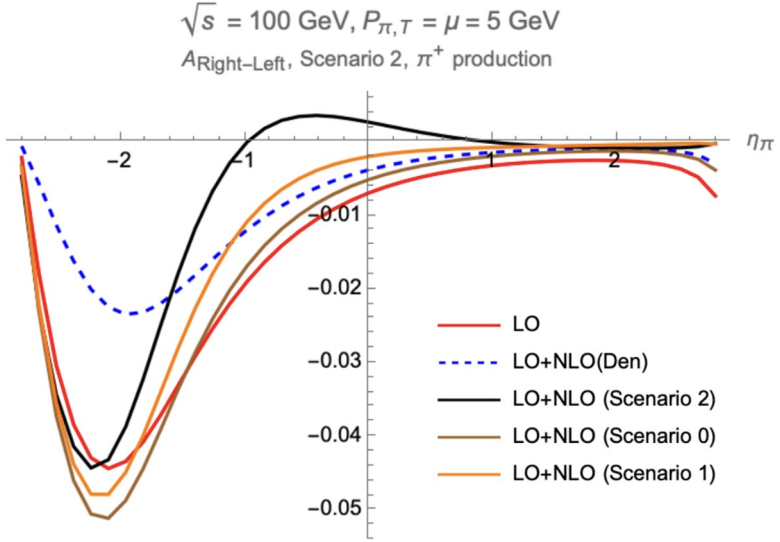


Werner Vogelsang (University of Tübingen)

Research interests: QCD corrections, resummation, spin-dependent PDFs

As seen on arXiv:

- Paper 1, NLO corrections and factorization for single-inclusive spin asymmetries (Rein, Schlegel, Tollkühn,WV) 2503.16097
- Paper 2, NNLO global analysis of polarized parton distribution functions (Borsa,de Florian,Sassot,Stratmann,WV) 2407.11635



Yang Fu (MIT)

Research interests: Lattice QCD, TMD physics, Collins-Soper kernel

As seen on arXiv:

- Determination of the Collins-Soper kernel from Lattice QCD 2402.06725
- First nonperturbative constraints on the gluon Collins-Soper kernel 25xx.xxxxx