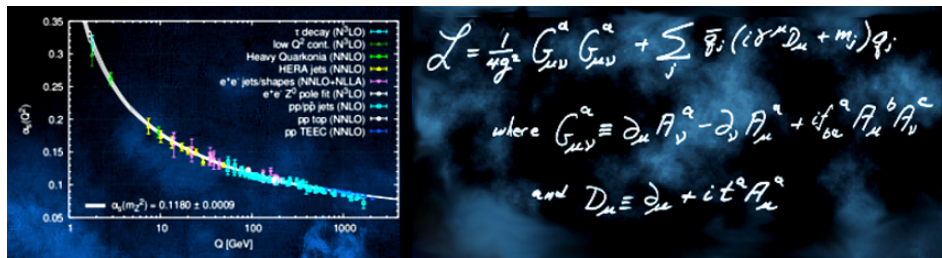


# alphas-2024: Workshop on precision measurements of the QCD coupling constant



## Report of Contributions

Contribution ID: 0

Type: **not specified**

## Presentation of the workshop

*Monday 5 February 2024 13:00 (15 minutes)*

### Summary

**Presenters:** D'ENTERRIA, David (CERN); ZANDERIGHI, Giulia (Max Planck Society (DE)); KLUTH, Stefan (Max Planck Society (DE))

**Session Classification:** Introduction and organisation

Contribution ID: 28

Type: **not specified**

## Discussion on PDG averaging

*Thursday 8 February 2024 11:00 (1 hour)*

### Summary

**Authors:** HUSTON, Joey (Michigan State University (US)); RABBERTZ, Klaus (KIT - Karlsruhe Institute of Technology (DE)); ZANDERIGHI, Giulia (Max Planck Society (DE))

**Presenters:** HUSTON, Joey (Michigan State University (US)); RABBERTZ, Klaus (KIT - Karlsruhe Institute of Technology (DE)); ZANDERIGHI, Giulia (Max Planck Society (DE))

**Session Classification:** Morning

Contribution ID: 74

Type: **not specified**

## **Renormalons and power corrections in $e^+e^-$ annihilation in the three-jet region**

*Wednesday 7 February 2024 17:00 (30 minutes)*

### **Summary**

**Presenter:** NASON, Paolo (Universita & INFN, Milano-Bicocca (IT))

**Session Classification:**  $\alpha_s$  from  $e^+e^-$  hadronic final states

Contribution ID: **81**

Type: **not specified**

## Discussion: $\alpha_s$ from lattice QCD

*Tuesday 6 February 2024 13:00 (30 minutes)*

**Session Classification:**  $\alpha_s$ : Lattice QCD

Contribution ID: **82**

Type: **not specified**

## **Discussion: alpha\_s from PDFs & LHC data**

*Wednesday 7 February 2024 14:30 (30 minutes)*

**Session Classification:** alpha\_s at hadron colliders

Contribution ID: 83

Type: **not specified**

## Discussion: $\alpha_s$ from tau decays

*Thursday 8 February 2024 18:00 (30 minutes)*

**Session Classification:**  $\alpha_s$  from tau decays

Contribution ID: **91**

Type: **not specified**

## **RG improvement and $\alpha_s$ determination from relativistic sum rules**

*Monday 5 February 2024 13:45 (30 minutes)*

### **Summary**

**Presenter:** KHAN, Mohd Siddique Akbar Alam (Indian Institute of Science Bangalore)

**Session Classification:**  $\alpha_s$ : Lattice QCD



Contribution ID: 92

Type: **not specified**

## Extraction of $\alpha_S$ using energy of a static quark-antiquark pair within hyperasymptotic approximation

*Monday 5 February 2024 14:15 (30 minutes)*

### Summary

**Presenter:** AYALA, Cesar

**Session Classification:**  $\alpha_s$ : Lattice QCD

Contribution ID: 93

Type: **not specified**

## Possible strategy to extract $\alpha_S$ using secondary Lund planes

*Tuesday 6 February 2024 18:00 (30 minutes)*

### Summary

**Presenter:** BALDENEGRO BARRERA, Cristian (Sapienza Universita e INFN, Roma I (IT))

**Session Classification:** alpha\_s at hadron colliders

Contribution ID: 94

Type: **not specified**

## Extraction of the strong coupling with HERA and EIC inclusive data

*Tuesday 6 February 2024 14:00 (30 minutes)*

arxiv:2307.01183

### Summary

**Presenter:** BARONTINI, ANDREA (Università degli studi di Milano)

**Session Classification:**  $\alpha_s$  from DIS & PDFs

Contribution ID: 95

Type: **not specified**

## **Determination of the strong coupling from TEECs in multijet events at $\sqrt{s} = 13$ TeV with the ATLAS detector**

*Tuesday 6 February 2024 17:00 (30 minutes)*

### **Summary**

**Presenter:** BARREIRO ALONSO, Fernando (Universidad Autonoma de Madrid (ES))

**Session Classification:**  $\alpha_s$  at hadron colliders

Contribution ID: 96

Type: **not specified**

## Determining $\alpha_S$ from Thrust with Power Corrections

*Wednesday 7 February 2024 16:30 (30 minutes)*

### Summary

**Presenter:** BENITEZ RATHGEB, MIGUEL ÁNGEL

**Session Classification:**  $\alpha_s$  from  $e^+e^-$  hadronic final states

Contribution ID: 97

Type: **not specified**

## **3-loop heavy flavor Wilson coefficients to the unpolarized and polarized deep-inelastic scattering**

*Tuesday 6 February 2024 18:30 (30 minutes)*

### **Summary**

**Presenter:** Prof. BLUEMLEIN, Johannes

**Session Classification:**  $\alpha_s$  from DIS & PDFs

Contribution ID: 99

Type: **not specified**

# The QCD Coupling at all Scales from Light Front Holography

*Wednesday 7 February 2024 18:30 (30 minutes)*

## Summary

**Presenters:** DEUR, Alexandre (Jefferson Lab); BRODSKY, Stanley J. (SLAC National Accelerator Laboratory, Stanford University)

**Session Classification:**  $\alpha_s$  from e+e- hadronic final states

Contribution ID: **100**

Type: **not specified**

## Measurement of $\alpha_s$ at CMS: status and prospects

*Wednesday 7 February 2024 14:00 (30 minutes)*

### Summary

**Presenter:** CONNOR, Patrick (University Hamburg (DE))

**Session Classification:** alpha\_s at hadron colliders



Contribution ID: **101**

Type: **not specified**

## MSHT20aN3LO alphas

*Tuesday 6 February 2024 15:00 (30 minutes)*

### Summary

**Presenter:** CRIDGE, Thomas (DESY)

**Session Classification:** alpha\_s from DIS & PDFs

Contribution ID: **102**

Type: **not specified**

## Charm mass effects in the Laplace-Borel sum rules for tau decay data

*Thursday 8 February 2024 17:00 (30 minutes)*

### Summary

**Presenter:** CVETIC, Gorazd

**Session Classification:**  $\alpha_s$  from tau decays

Contribution ID: **103**

Type: **not specified**

## **Determination of $\alpha_S$ from the Z-boson transverse-momentum distribution (CDF)**

*Wednesday 7 February 2024 13:00 (30 minutes)*

### **Summary**

**Presenters:** FERRERA, Giancarlo (Università degli Studi e INFN Milano (IT)); FERRERA, Giancarlo (University of Milan)

**Session Classification:**  $\alpha_s$  at hadron colliders

Contribution ID: **104**

Type: **not specified**

## **Determination of $\alpha_S$ from azimuthal correlations among jets (CMS)**

*Tuesday 6 February 2024 16:30 (30 minutes)*

### **Summary**

**Presenter:** GIANNEIOS, Paris (Université Libre de Bruxelles (BE))

**Session Classification:**  $\alpha_s$  at hadron colliders

Contribution ID: **107**

Type: **not specified**

## **Hadronic tau spectral function moments in the RF gluon condensate scheme**

*Thursday 8 February 2024 16:30 (30 minutes)*

### **Summary**

**Presenter:** HOANG, Andre

**Session Classification:**  $\alpha_s$  from tau decays

Contribution ID: **109**

Type: **not specified**

# Factorial Growth in pQCD and Implications for $\alpha_s$

*Monday 5 February 2024 15:15 (30 minutes)*

## Summary

**Presenter:** KRONFELD, Andreas

**Session Classification:** alpha\_s: Lattice QCD

Contribution ID: **110**

Type: **not specified**

## **Effect of Renormalon Scheme and Perturbative Scale Choices on $\alpha_s$ from $e^+e^-$ event shapes**

*Wednesday 7 February 2024 18:00 (30 minutes)*

### **Summary**

**Presenter:** LEE, Christopher (LANL)

**Session Classification:**  $\alpha_s$  from  $e^+e^-$  hadronic final states

Contribution ID: **111**

Type: **not specified**

## **TUMQCD: alpha from 2+1+1 static potential**

*Monday 5 February 2024 14:45 (30 minutes)*

### **Summary**

**Presenter:** LEINO, Viljami

**Session Classification:** alpha\_s: Lattice QCD



Contribution ID: 112

Type: **not specified**

# Measurement of jet production in deep inelastic scattering and NNLO determination of the strong coupling at ZEUS

*Tuesday 6 February 2024 14:30 (30 minutes)*

DESY-23-129, arxiv:2309.02889

## Summary

**Presenter:** LORKOWSKI, Florian (University of Zürich)

**Session Classification:** alpha\_s from DIS & PDFs

Contribution ID: 113

Type: **not specified**

## AlphaS determination from event shapes / the static potential

*Wednesday 7 February 2024 16:00 (30 minutes)*

### Summary

**Presenter:** Prof. MATEU, VICENT (University of Salamanca)

**Session Classification:** alpha\_s from e+e- hadronic final states

Contribution ID: **114**

Type: **not specified**

## **Lambda\_0 from the static force on the lattice with gradient flow**

*Monday 5 February 2024 16:15 (30 minutes)*

### **Summary**

**Presenter:** MAYER-STEUDTE, Julian

**Session Classification:** alpha\_s: Lattice QCD

Contribution ID: 115

Type: **not specified**

## Next-to-leading power correction to event shape variables.

*Wednesday 7 February 2024 17:30 (30 minutes)*

### Summary

**Presenter:** Mr MISHRA, Shubham (IIT Hyderabad)

**Session Classification:**  $\alpha_s$  from e+e- hadronic final states

Contribution ID: **116**

Type: **not specified**

## **Power corections and alpha\_S from e+e- -> hadrons**

*Thursday 8 February 2024 14:30 (30 minutes)*

### **Summary**

**Presenter:** NARISON, Stephan

**Session Classification:** alpha\_s from e+e- hadronic final states

Contribution ID: 117

Type: **not specified**

## Strong coupling constant from multiplicity ratio of QCD gluon and quark jets

*Thursday 8 February 2024 13:00 (30 minutes)*

### Summary

**Presenter:** Dr PÉREZ-RAMOS, Redamy (IPSA/LPTHE)

**Session Classification:**  $\alpha_s$  from e+e- hadronic final states

Contribution ID: **118**

Type: **not specified**

## alpha\_S from tau decay

*Thursday 8 February 2024 16:00 (30 minutes)*

### Summary

**Presenter:** PERIS, Santi

**Session Classification:** alpha\_s from tau decays

Contribution ID: **119**

Type: **not specified**

## **Lattice determination of the strong coupling constant from moments of quarkonium correlators**

*Monday 5 February 2024 17:15 (30 minutes)*

### **Summary**

**Presenter:** PETRECZKY, Peter

**Session Classification:** alpha\_s: Lattice QCD



Contribution ID: **120**

Type: **not specified**

## **Violations of quark-hadron duality in low-energy determinations of the strong coupling**

*Thursday 8 February 2024 17:30 (30 minutes)*

### **Summary**

**Presenter:** PICH, Antonio

**Session Classification:**  $\alpha_s$  from tau decays

Contribution ID: 121

Type: **not specified**

# The complete EM Euclidean Adler function and its interplay with $\alpha_s$ and $\alpha_{\text{QED}}$

*Thursday 8 February 2024 13:30 (30 minutes)*

## Summary

**Presenter:** RODRIGUEZ SANCHEZ, Antonio

**Session Classification:**  $\alpha_s$  from e+e- hadronic final states

Contribution ID: 122

Type: **not specified**

## Reliably determination of the QCD coupling from Ruds measurements

*Thursday 8 February 2024 14:00 (30 minutes)*

### Summary

**Presenter:** SHEN, Jian-Ming

**Session Classification:**  $\alpha_s$  from e+e- hadronic final states

Contribution ID: 123

Type: **not specified**

## **Determination of $\alpha_s$ in 2+1 flavor lattice QCD from gradient flow**

*Monday 5 February 2024 16:45 (30 minutes)*

### **Summary**

**Presenter:** SHU, Hai-Tao

**Session Classification:**  $\alpha_s$ : Lattice QCD

Contribution ID: **124**

Type: **not specified**

## FLAG working group on alpha\_S

*Monday 5 February 2024 18:15 (30 minutes)*

### Summary

**Presenter:** SINT, Stefan (Trinity College Dublin)

**Session Classification:** alpha\_s: Lattice QCD

Contribution ID: 126

Type: **not specified**

## Measurement of $\alpha_S$ from energy correlators in jets (CMS)

*Tuesday 6 February 2024 17:30 (30 minutes)*

### Summary

**Presenter:** XIAO, Meng (ZJU - Zhejiang University (CN))

**Session Classification:**  $\alpha_s$  at hadron colliders

Contribution ID: 127

Type: **not specified**

## Discussion: $\alpha_S$ from $e^+e^-$ to hadronic final states

*Thursday 8 February 2024 15:00 (30 minutes)*

### Summary

**Session Classification:**  $\alpha_s$  from  $e^+e^-$  hadronic final states

Contribution ID: **128**

Type: **not specified**

## **Determination of the strong coupling constant via the Drell Yan process (ATLAS)**

*Wednesday 7 February 2024 13:30 (30 minutes)*

### **Summary**

**Presenter:** SCHOTT, Matthias (CERN / University of Mainz)

**Session Classification:**  $\alpha_s$  at hadron colliders



Contribution ID: **129**

Type: **not specified**

## Accurate determination of the strong coupling

*Monday 5 February 2024 13:15 (30 minutes)*

### Summary

**Presenter:** RAMOS MARTINEZ, Alberto (Univ. of Valencia and CSIC (ES))

**Session Classification:** alpha\_s: Lattice QCD

Contribution ID: **130**

Type: **not specified**

# On the heavy quark correlator moments method

*Monday 5 February 2024 17:45 (30 minutes)*

## Summary

**Presenter:** SOMMER, Rainer Paul (DESY)

**Session Classification:** alpha\_s: Lattice QCD

Contribution ID: **131**

Type: **not specified**

## **Perspectives on measurements of $\alpha_s$ from spin structure functions**

*Tuesday 6 February 2024 13:30 (30 minutes)*

### **Summary**

**Presenter:** DEUR, Alexandre (Jefferson Lab)

**Session Classification:**  $\alpha_s$  from DIS & PDFs

Contribution ID: **132**

Type: **not specified**

## alphas and NNPDF fits

*Tuesday 6 February 2024 16:00 (30 minutes)*

### Summary

**Presenter:** DEL DEBBIO, Luigi (The University of Edinburgh (GB))

**Session Classification:** alpha\_s from DIS & PDFs