

# Fourth workshop on "Perceiving the Emergence of Hadron Mass through AMBER@CERN" (EHM2020/3)

Monday 30 November 2020 - Friday 04 December 2020

Perceiving the Emergence  
of Hadron Mass through

**AMBER@CERN**

**30 November to 4 December 2020  
CERN, Geneva - Switzerland**



## Book of Abstracts



# Contents

Welcome . . . . .	1
EicC Status, White Paper . . . . .	1
PANDA Physics . . . . .	1
EIC Status . . . . .	1
COMPASS++/AMBER Phase I/II Physics . . . . .	1
EHM in the EIC Yellow Report, Synergy JLab-EIC-COMPASS++/AMBER . . . . .	1
Discussion: Outlook for experimental access to EHM . . . . .	1
ChPT relation to the EHM . . . . .	1
Role of pion and kaon PDFs in quantifying EHM . . . . .	2
Role of meson spectroscopy in unfolding the character of EHM in the SM . . . . .	2
Role of near-threshold heavy-quarkonia production in providing access to QCD trace anomaly . . . . .	2
Quark and gluon distributions in mesons from quarkonium production . . . . .	2
Further prospects for pion structure measurements at EIC . . . . .	2
Discussion . . . . .	2
Access to meson PDAs from AMBER . . . . .	2
IQCD and Pion and Kaon DAs, LaMET . . . . .	2
Pion GTMDs . . . . .	3
Lattice parton distribs and global QCD analysis . . . . .	3
Pion and Kaon GPDs . . . . .	3
Large-x: testing the nonperturbative pion structure through phenomenology . . . . .	3
Discussion . . . . .	3
Diquark correlations and where to find them . . . . .	3
DAs and DFs of diquark correlations . . . . .	3

Investigation of the nucleon structure with single pion SIDIS with CLAS12 at JLab . . .	3
BLFQM . . . . .	4
Global analysis of TMD PDFs at NLO and NNLL in QCD . . . . .	4
Kaon structure in nuclear medium . . . . .	4
Discussion . . . . .	4
Pion and kaon distribution functions with the maximum entropy input . . . . .	4
xFitter . . . . .	4
Pion and Kaon distrib functions in QCD instanton vacuum . . . . .	4
EHM from baryon structure studies with electromagnetic probes . . . . .	4
Discussion . . . . .	5

**Session 1 / 23**

## **Welcome**

**Corresponding Author:** wolf.dieter.nowak@googlemail.com

**Session 1 / 24**

## **EicC Status, White Paper**

**Session 1 / 25**

## **PANDA Physics**

**Session 1 / 26**

## **EIC Status**

**Session 1 / 27**

## **COMPASS++/AMBER Phase I/II Physics**

**Session 1 / 28**

## **EHM in the EIC Yellow Report, Synergy JLab-EIC-COMPASS++/AMBER**

**Session 1 / 29**

## **Discussion: Outlook for experimental access to EHM**

**Corresponding Author:** oleg.denisov@cern.ch

**Session 2 / 30**

## **ChPT relation to the EHM**

**Session 2 / 31**

## **Role of pion and kaon PDFs in quantifying EHM**

**Session 2 / 32**

## **Role of meson spectroscopy in unfolding the character of EHM in the SM**

**Session 2 / 33**

## **Role of near-threshold heavy-quarkonia production in providing access to QCD trace anomaly**

**Session 2 / 34**

## **Quark and gluon distributions in mesons from quarkonium production**

**Session 2 / 35**

## **Further prospects for pion structure measurements at EIC**

**Session 2 / 36**

## **Discussion**

**Corresponding Author:** [cdroberts@nju.edu.cn](mailto:cdroberts@nju.edu.cn)

**Session 3 / 37**

## **Access to meson PDAs from AMBER**

**Corresponding Author:** [cdroberts@nju.edu.cn](mailto:cdroberts@nju.edu.cn)

**Session 3 / 38**

## **IQCD and Pion and Kaon DAs, LaMET**

Session 3 / 39

### **Pion GTMDs**

Session 3 / 40

### **Lattice parton distribs and global QCD analysis**

Session 3 / 41

### **Pion and Kaon GPDs**

Session 3 / 42

### **Large-x: testing the nonperturbative pion structure through phenomenology**

Session 3 / 43

### **Discussion**

**Corresponding Author:** [stephane.platchkov@cern.ch](mailto:stephane.platchkov@cern.ch)

Session 4 / 44

### **Diquark correlations and where to find them**

Session 4 / 45

### **DAs and DFs of diquark correlations**

Session 4 / 46

## **Investigation of the nucleon structure with single pion SIDIS with CLAS12 at JLab**

Session 4 / 47

### **BLFQM**

Session 4 / 48

### **Global analysis of TMD PDFs at NLO and NNLL in QCD**

Session 4 / 49

### **Kaon structure in nuclear medium**

Session 4 / 50

### **Discussion**

Session 5 / 51

### **Pion and kaon distribution functions with the maximum entropy input**

Session 5 / 52

### **xFitter**

Session 5 / 53

### **Pion and Kaon distrib functions in QCD instanton vacuum**

Session 5 / 54



## **EHM from baryon structure studies with electromagnetic probes**

**Session 5 / 55**

### **Discussion**

**Corresponding Authors:** jan@tum.de, wolf-dieter.nowak@cern.ch, catarina.quintans@cern.ch, oleg.denisov@cern.ch, cdroberts.phy.anl@gmail.com