

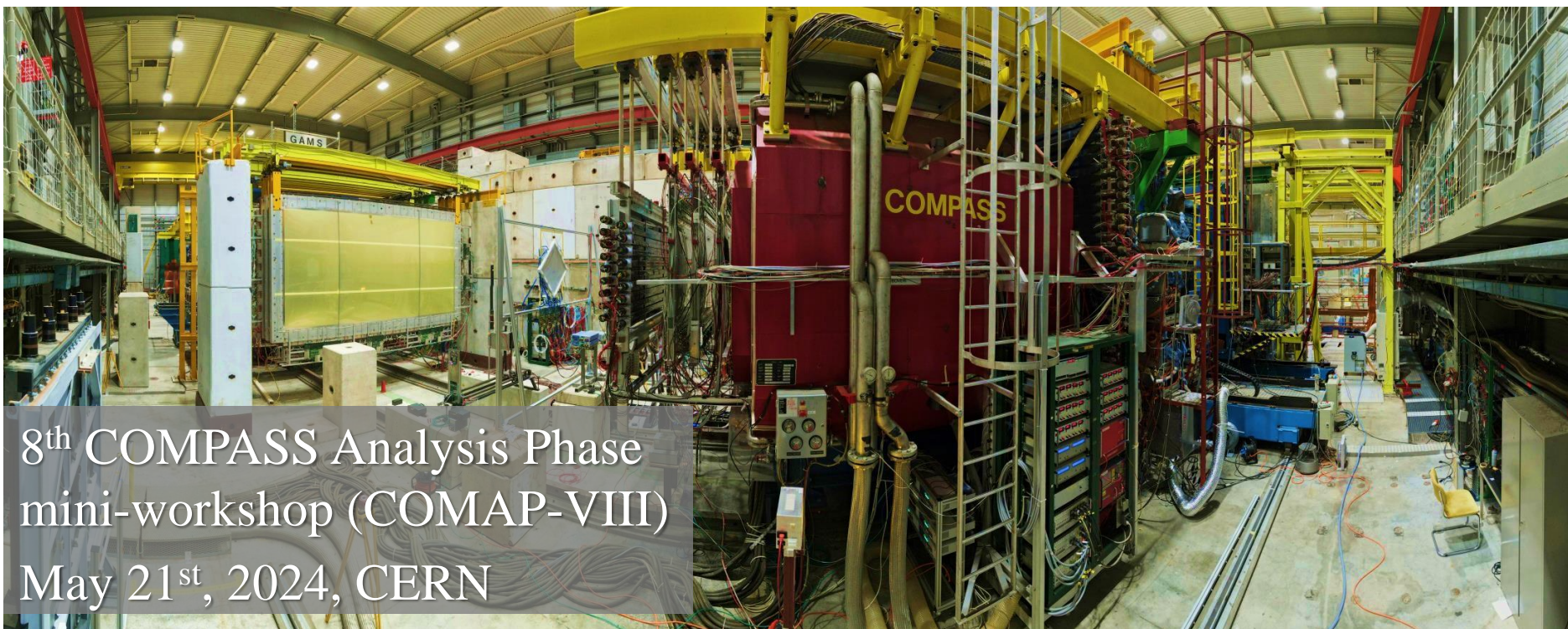
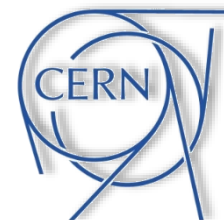
- Introduction



Bakur Parsamyan

(for the organizers)

AANL(Yerevan), CERN
and INFN (Torino)



8th COMPASS Analysis Phase
mini-workshop (COMAP-VIII)

May 21st, 2024, CERN



COMPASS collaboration



Common Muon and Proton Apparatus for Structure and Spectroscopy



28 institutions from 14 countries
– nearly 210 physicists (in 2023: start of the Analysis Phase)

3 new groups joined the COMPASS collaboration in 2023
UConn (US), AANL (Armenia), NCU (Taiwan)

- CERN SPS North Area
- Fixed target experiment
- Approved in 1997 (25 years)
- Taking data since 2002 (20 years)

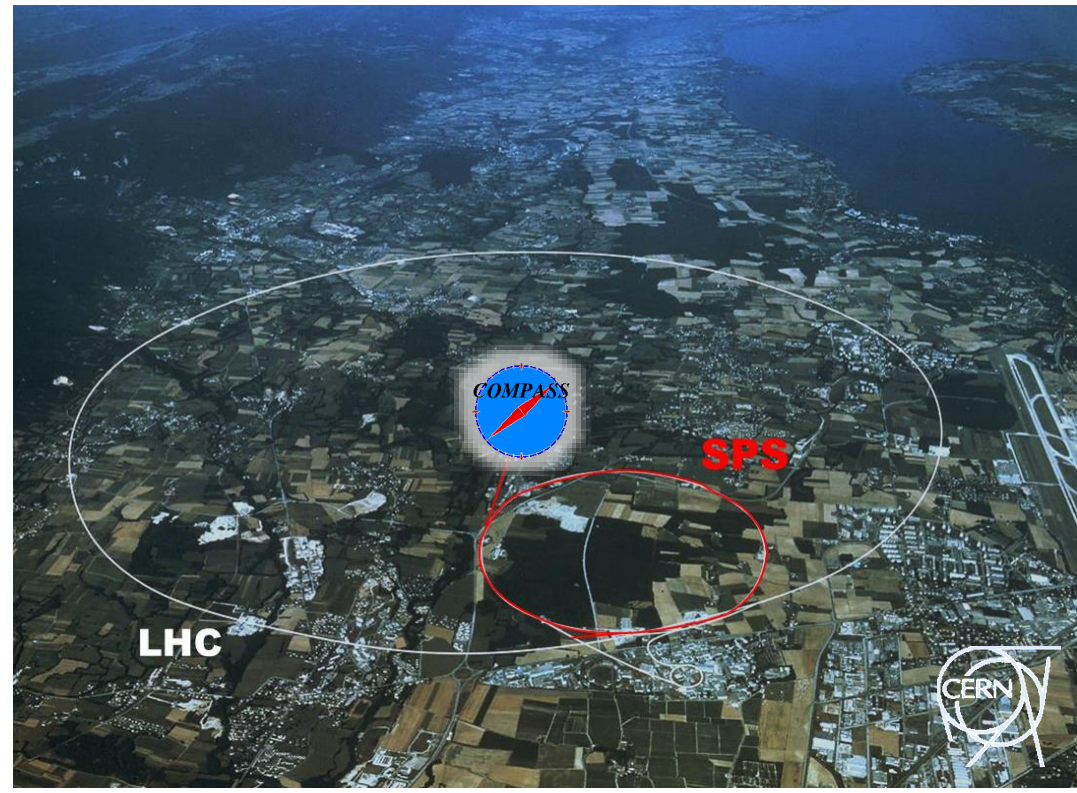
Wide physics program

COMPASS phase-I

- Data taking 2002-2011
- Muon and hadron programs
- Nucleon spin structure (SIDIS)
- Spectroscopy and exotics

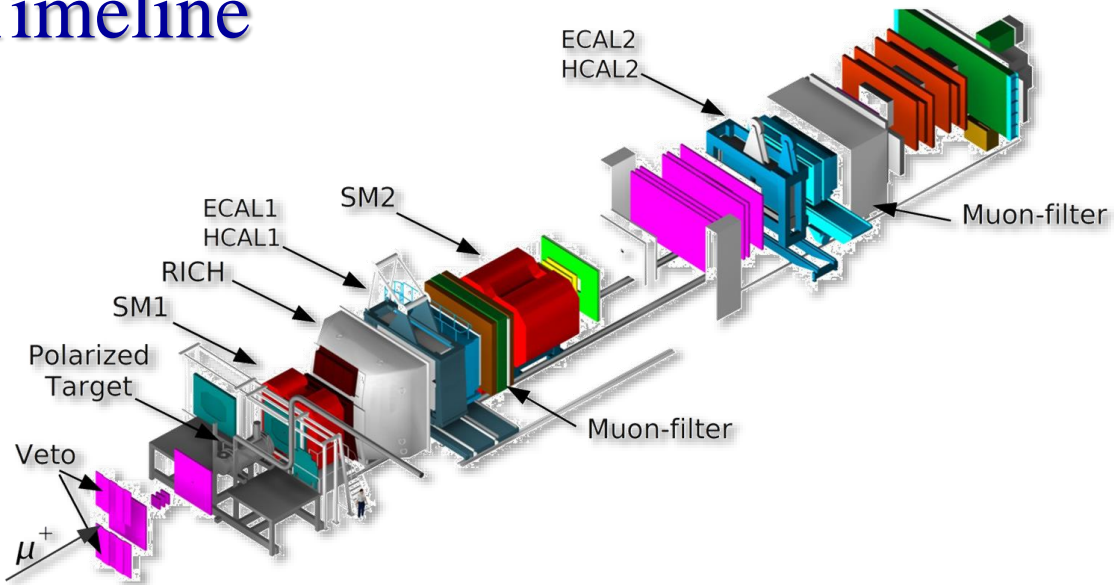
COMPASS phase-II

- Data taking 2012-2022
- Primakoff
- DVCS (GPD+SIDIS)
- Polarized Drell-Yan
- **Transverse deuteron SIDIS 2022**

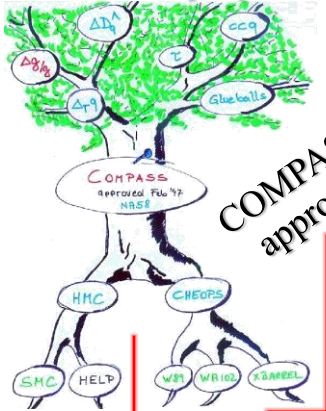


COMPASS web page: <http://wwwcompass.cern.ch>

COMPASS Timeline



COMPASS proposal



COMPASS approval

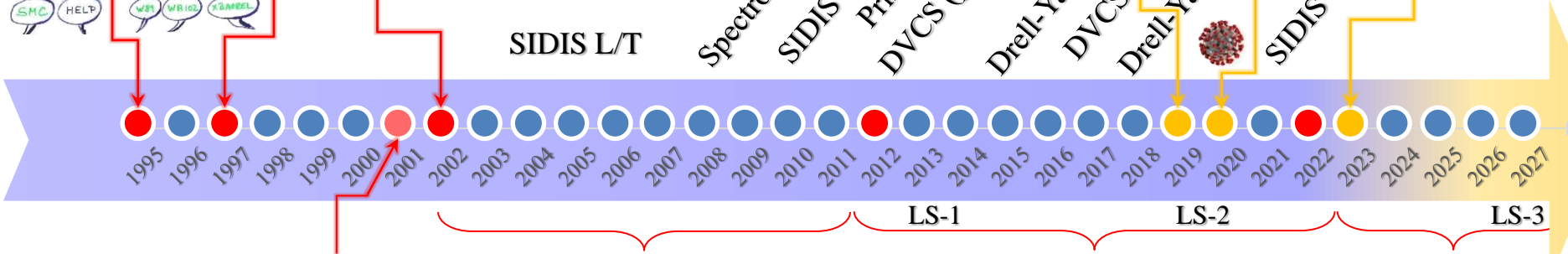
COMPASS 1st data taking

COMPASS++/AMBER proposal

AMBER approval

AMBER Apparatus for Meson and Baryon Experimental Research

AMBER 1st data taking



SIDIS L/T

Spectroscopy

SIDIS L/T

Primakoff

DVCS (pilot)

Drell-Yan

DVCS

Drell-Yan

SIDIS T

Pilot run

Phase I

LS-1

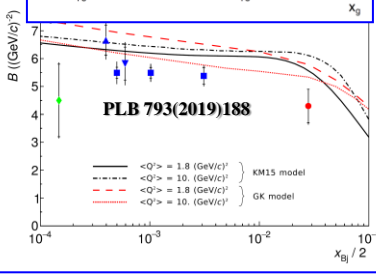
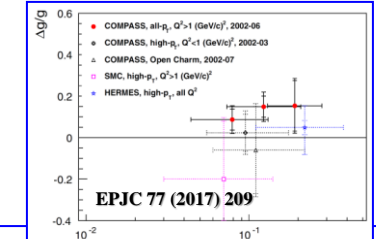
LS-2

LS-3

Phase II

Analysis Phase

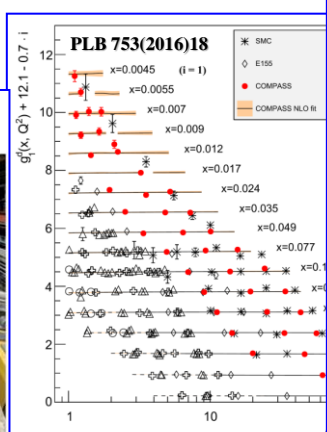
COMPASS Legacy



NEWS
COMPASS measures the pion polarizability
21 February 2015

CERN experiment brings precision to a cornerstone of particle physics

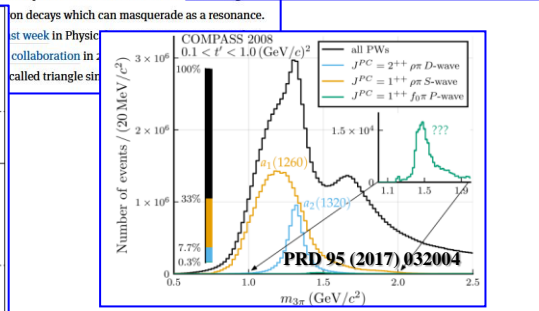
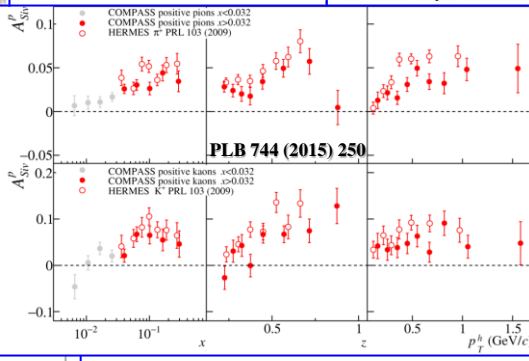
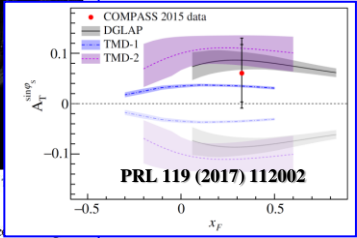
The COMPASS experiment in the North Area on the Prévision site at CERN studies hadron structure both with pion beams and with muon beams – a powerful combination.
Image credit: CERN-EX-105182-01.



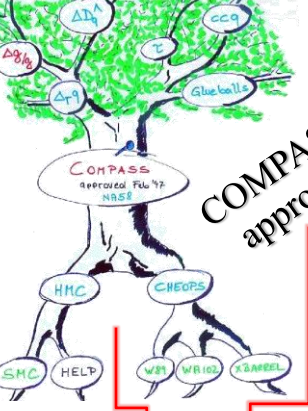
FLAVOUR PHYSICS / NEWS
COMPASS points to triangle singularity
23 August 2021

Turning the needle A snapshot of part of the COMPASS spectrometer. Credit: P. PHOTO:202104-0602

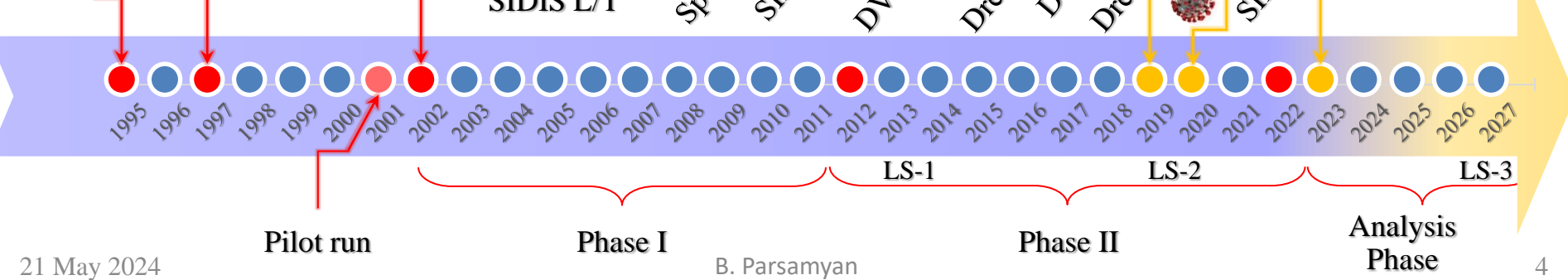
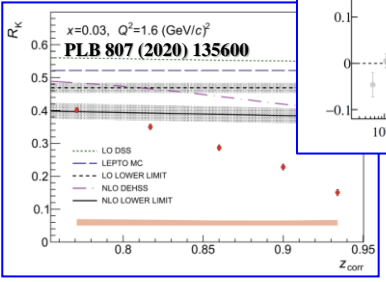
The COMPASS experiment at CERN has reported the first direct evidence



COMPASS proposal

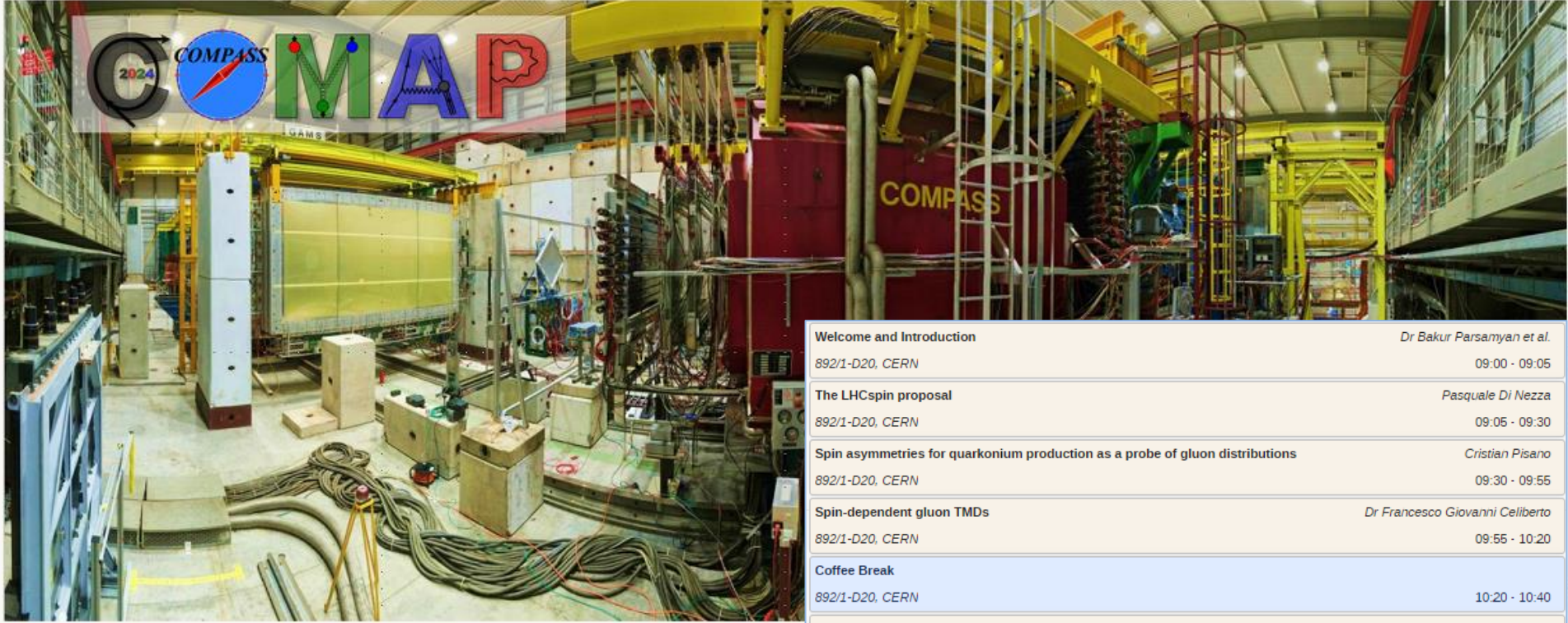


COMPASS approval
COMPASS 1st data taking



After 25 years - Important takeaway messages

- Importance of careful understanding and confrontation of experimental data from different experiments
 - Different kinematic domains and phase-space limitations
 - Experiments employ complex analysis techniques, Monte-Carlo simulations, and sophisticated corrections (e.g. acceptance, VMs, radiative corrections)
- Close collaboration between different experiments → general benefit for the field
 - Knowledge transfer, comparison of the analysis techniques, tools, and methodology, cross-analyses between different experiments
- Close collaboration between experiment and phenomenology/theory
 - Flexibility in adapting on the analysis side to the choice of the observables, phase-space selections, etc. (before publishing the data)
 - Different possibilities for common paper projects, external membership
- Possibility to organize effective and fruitful collaborative work



The 8th edition of COMAP mini-workshop dedicated to synergies between COMPASS, LHCspin and AMBER projects

22 May 2024, CERN, Switzerland
<https://indico.cern.ch/e/COMAP-LHCspin-AMBER>

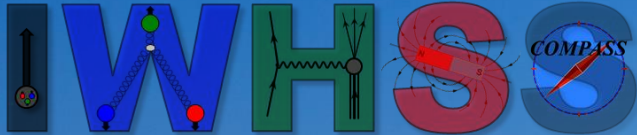
Organizers: Bakur Parsamyan, Pasquale Di Nezza, Fulvio Tassarotto, Jan Matousek, Luciano Libero Pappalardo, Marco Santimaria, Thomas Poschl

Welcome and Introduction	<i>Dr Bakur Parsamyan et al.</i>
892/1-D20, CERN	09:00 - 09:05
The LHCspin proposal	<i>Pasquale Di Nezza</i>
892/1-D20, CERN	09:05 - 09:30
Spin asymmetries for quarkonium production as a probe of gluon distributions	<i>Cristian Pisano</i>
892/1-D20, CERN	09:30 - 09:55
Spin-dependent gluon TMDs	<i>Dr Francesco Giovanni Celiberto</i>
892/1-D20, CERN	09:55 - 10:20
Coffee Break	
892/1-D20, CERN	10:20 - 10:40
Pion-induced Drell-Yan and J/psi production measurements of COMPASS	<i>Catarina Quintans</i>
892/1-D20, CERN	10:40 - 11:05
Quarkonium Polarization Measurements: Challenges and Opportunities	<i>Ilse Kraetschmer</i>
892/1-D20, CERN	11:05 - 11:30
LHCspin UPC physics opportunities	
892/1-D20, CERN	11:30 - 11:55
The physics case of LHCspin	<i>Luciano Libero Pappalardo</i>
892/1-D20, CERN	14:00 - 14:25
LHCspin simulations	<i>Marco Santimaria</i>
892/1-D20, CERN	14:25 - 14:50
Pion and kaon PDFs confronted by fixed-target charmonium production	<i>Jen-Chieh Peng</i>
892/1-D20, CERN	14:50 - 15:15
Drell-Yan and J/psi measurements programm at AMBER	
892/1-D20, CERN	15:15 - 15:40
Round table	
892/1-D20, CERN	15:40 - 16:20

2024
30/09 - 04/10



Joint XX-th International Workshop on Hadron Structure and Spectroscopy and 5-th Workshop on Correlations in Partonic and Hadronic Interactions



Yerevan, Armenia

30 September – 4 October, 2024

<https://indico.cern.ch/e/IWHSS-CPHI-2024>

Confirmed speakers

Abhay Deshpande	Dennis Sivers	Leonard Gamberg	Stefan Diehl
Albi Kerbizi	Eric Voutier	Liliet Diaz	Stephane Peigné
Alessandro Bacchetta	Gregory Matousek	Marco Radici	Holly Szumila-Vance
Alessandro Pilloni	Giulio Mezzadri	Misak Sargsian	Timothy Hayward
Alexander Ilyichev	Gunar Schnell	Nobuo Sato	Valery Kubarovskiy
Alexey Prokudin	Igor Denisenko	Oleg Eyser	Valerio Bertone
Alexey Vladimirov	Ishara Fernando	Pasquale Di Nezza	Xuan Tong
Asmita Mukherjee	Jen-Chieh Peng	Patrizia Rossi	Whitney Armstrong
Audrey Francisco	Jinlong Zhang	Paweł Sznajder	Xiao-Rui Lyu
Charlotte Van Hulse	Lamiaa El Fassi	Shohini Bhattacharya	Yuri Kovchegov
Cristian Pisano	Latifa Elouadrhiri	Silvia Niccolai	Zein-Eddine Meziani