

# Report from the International Spin Physics Committee (since SPIN2021)

Paolo Lenisa

University of Ferrara and INFN, Italy

Lenisa (Ferrara)

## International Spin-Physics Committee

#### Voting members 2021-23

- P. Lenisa (Chair) (U. Ferrara)
- H. Gao (Past Chair) (BNL & Duke U.)
- R. Milner (MIT)
- C. Alexandrou (U. Cyprus)
- K. Aulenbacher (U. Mainz)
- V. Barone (U. Piemonte Orientale)
- N. D'Hose (CEA Saclay)
- H. En'yo (RIKEN)
- R. Fatemi (U. Kentucky)

- A. Guskov (JINR)
- C. Keith (JLab)
- K. Kirch (ETH Zürich)
- Z. Liang (Shandong U.)
- P. Mulders (VU, Amsterdam)
- N. Saito (J-PARC)
- H. Ströher (FZJ)
- W. Vogelsang (Ú. Tübingen)
- X. Zheng (U. Virginia)

#### **Honorary Members**

- F. Bradamante (U. Trieste)
- D.G. Crabb (U. Virginia)
- G. Fidecaro (CERN)
- A. Masaike (Kyoto Ú.)

- C.Y. Prescott (SLAC)
- T. Roser (BNL)
- E. Steffens (U. Erlangen)
- W.T.H. van Oers (U. Manitoba)
- ISPC serves to organise spin-physics symposia and workshops
- Members elected for 4 years terms (renewable for one term)
- Balance between Theory, Experiment, Source & Target and Accelerator fields
- Promote excellence, diversity and inclusivity, geographical balance and representation of important laboratories and institutions

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## **Spin Conferences**

#### **Spin-Physics Symposia**

Discussion on Spin Physics emerged from two Conference Series:

- Symposia on Polar. Phenomena in Nucl. React. (every 5 years, 1960 1994)
- Symposia on High Energy Spin Physics (every 2 years, 1974 1998)

Starting 2000 (Osaka) series continued as "International Symposia on Spin Physics".

 Upton (US), Trieste (IT), Kyoto (J), Charlottesville (US), Jülich (D), Dubna (RU), Beijing (CHN), Champaign (US), Ferrara (IT), Matsue (J), Durham (US)

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#### **Workshops on Spin-Tools**

Development of exp.or theor. methods to perform or analyze Spin experiments. Promote exchange of information among different areas and competences

- Dedicated workshops and topical meetings on Spin Tools (1966 ...)
- PST Workshop since 1991 (Heidelberg)

PSTP (Polarized Sources and Targets) Workshops started in 2009 (Ferrara)

St. Petersburg (RU), Charlottesville (US), Bochum (D), Kaist (ROK), Knoxville (US), Mainz (D)

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#### Archiving and accessibility of information

- Proceedings published by POS
- Repository: http://www.spin-community.org/index.php@id=1.html

## PSTP2022 - Mainz (D)



#### 47 registered participants

- Only plenary talks
- Polarized Targets: 13 talks
- Polarized Sources: 7 talks
- Polarization Applications: 8 talks
- Polarimetry: 9 talks
- Total: 37 talks
- Plenary Discussion GSI/FAIR
- Excursion to Stern-Gerlach experiment at Frankfurt University

## SPIN2023 - Summary numbers

#### 255 registered participants (!)

- Sessions: 8 parallel, 10 plenary, 1 poster session
- Nucleon helicity structure (15 parall.)
- Spin physics in nuclear reactions and nuclei (13 parall.)
- 3D structure of the nucleon: TMDs (9 plen., 39 parall.)
- 3D structure of the nucleon: GPDs and form factors (6 plen., 31 parall.)
- Low energy spin physics with lepton, photon, and had. probes (4 pl., 14 parall.)
- Fund. symmetries and spin physics beyond the Standard Model (16 parall.)
- Acceleration, storage, and polarimetry of polarized beams (12 parall.)
- Polarized ion and lepton sources and targets (21 parall.)
- Future facilities and experiments (3 plen., 28 parall.)
- Application of nuclear polarization techniques to other fields (3 plen., 10 parall.)
- Spin in heavy ion collisions (3 plen., 11 parall.)
- Inclusive/LHC (3 plen.)
- Total presentations: 31 plenary, 210 parallel
- 17 posters

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- Different scheme wrt past: daily separated plenary and parallel sessions
- Please leave us your feedback (lenisa@fe.infn.it)

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## **PSTP2024**



#### **PSTP 2024**

#### PSTP 2024 at JLab - Newport News (VA)

Polarized beams and the associated polarimetry are essential technologies that are used for nearly experiment in JLab's experimental halls. Polarized gas and solid targets were implemented many times during the 6 GeV era, have already been used at 12 GeV. JLab is clearly a strong proponent and user of polarization technology.

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- Late Sept. early Oct.: 5+1 days. Afternoon devoted to tour of JLab facilities.
- Workshop format: plenary-only talks in the main auditorium of CEBAF Center.
- Plan for an additional series of pedagogical lectures on polarization physics and techniques for students and early-career scientists that are new to the field.
- Outside funding from to partially offset registration fees. Registration at a lower rate for students.
- 450\$ 500\$ fee includes reception. Conference dinner and excursion.
- Reduced rate at a nearby hotel and shuttle service to and from the workshop. Limited number of rooms at JLab's Residence Facility available.
- Proceedings published online on Proceedings of Science.
- Contacts: ckeith@jlab.org, grames@jlab.org, gaskelld@jlab.org



## SPIN 2025 at Shandong University (CHN)

The institute have been working in hadronic and heavy-ion spin physics for decades from both experimental and theoretical aspects. Participation to the STAR experiment at BNL, involved in several experiments in Hall A and Hall B at Jefferson Lab. Participation to EIC, and the Electron-Ion Collider in China (EicC).

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- Qingdao (Tsingtao), coastal city with 7 million inhabitants in eastern Shandong Province. Reached by the Qingdao Jiaodong International Airport (TAO), served by 13 airlines that operate 94 routes.
- Tentative schedule: Sept. 22-26, 2025 or Oct. 12-17, 2025
- Two possible meeting venues.



Estimated fee: 300 \$ - 500 \$ (2 Coffee Breaks and Lunch, daily)

#### Contact: liang@sdu.edu.cn

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#### ISPC: Membership 2024-27 and Chair 2026-2029

#### Outgoing members 2020-23

- R. Milner (MIT)
- V. Barone (U. Piem. Or)
- H. En'yo (RIKEN)

- P. Mulders (VA, Amsterdam)
- N. Saito (J-PARC)
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Incoming members 2024-27	
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#### Elected Chair 2026-2029

• N. Saito (JPARC)

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- 1922: Stern-Gerlach experiment at Frankfurt University
  - Evidence: angular momentum is quantized!



- NOTE 1: Sommerfield's assumption: Ag with L = 1, but Ag has L=0!
   Would S & G have performed the experiment by knowing it? <sup>(1)</sup>
- NOTE 2: For the case of L=1, there should have been 3 spots and not 2!

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1922: Stern-Gerlach: right experiment, wrong theory

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1925: Goudsmit and Uhlenbeck: introduction of spin (not mentioning the S-G result ...)

# Thank you!

#### The magic of spin: Dirac's belt trick







Holding one end of the belt fixed, give it two complete turns.

Now, holding both ends fixed, untwist the belt by keeping the endpoints fixed, and just moving the rest of the belt continuously.

P.S. note that a mere 360 degree twist cannot be undone in this manner.

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