

# On a few PERLE Collaboration Matters

Herwig Schopper and "The Future of the LHC"

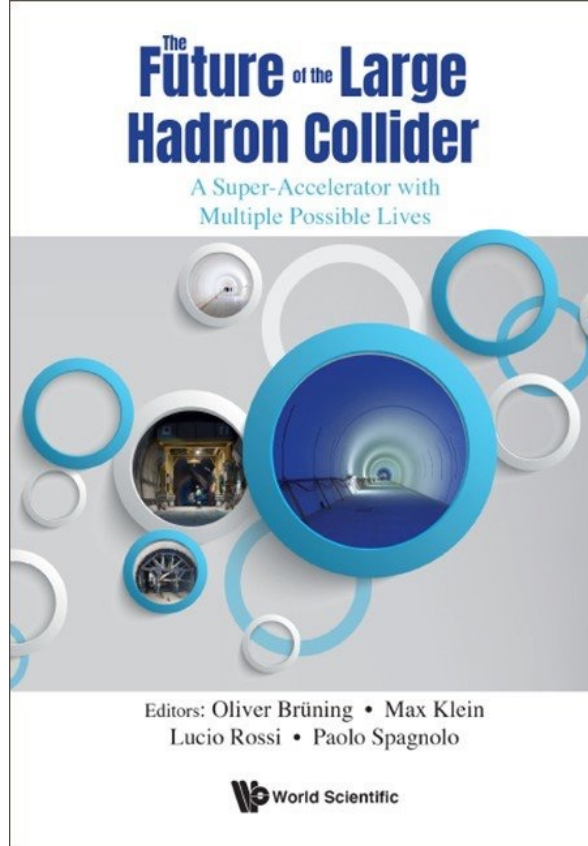
Remarks

Drafts for Publication and Authorship Policies

Max Klein (U Liverpool) , with Achille Stocchi (IJCLab Orsay).

PERLE Collaboration Board Meeting, March 8, 2024

A Step into the Future at the age of 90. DPG Dresden 2013..



## • Introduction

- **Foreword (Herwig Schopper)**
- New Theory Paradigms at the LHC

## •The First Decade of the LHC

### •High Luminosity LHC

- **Accelerator Challenges**
- **Physics with HL-LHC**
- **Further Experiments and Facility Concepts**
  - The FASER Experiment
  - The SND@LHC Experiment
  - Gamma Factory

## •Future Prospects

- **Electron-Hadron Scattering**
  - An Energy Recovery Linac for the LHC
  - Electron-Hadron Scattering Resolving Parton Dynamics
  - Higgs and Beyond the Standard Model Physics
  - A New Experiment for the LHC
- **The High-Energy LHC**
  - High Energy LHC Machine Options in the LHC Tunnel
  - Physics at Higher Energy at the Large Hadron Collider
  - HE-LHC Operational Challenges
  - Vacuum Challenges at the Beam Energy Frontier
- **LHC in the FCC Era**
  - The LHC as FCC Injector

61 Authors



PERLE/LHeC/FCCeh  
Workshop. Orsay 10/22

Physics, Detector, Accelerator  
and **IAC Recommendations:**  
*J.Phys.G* 48 (2021) 11, 110501  
**2007.14491 CDR LHeC update**

Herwig's four inclinations to chair the **International Advisory Committee for TeV Scale ep/eA Physics at CERN**

**Physics:** from formfactors at  $Q^2$  around 1 <https://doi.org/10.1103/PhysRevLett.7.141> to **structure functions extending to  $10^6 \text{ GeV}^2$**

**Detectors:** from Sampling Total Absorption Counter (1966), PETRA and LEP experiments to **full eh detector designs**

**Accelerator:** from first Superconducting cavities (Karlsruhe 1968) to **Energy Recovery Linacs for PERLE/LHeC/FCCeh**

**Particle Physics:** from its beginnings (as with Lise Meitner, Otto Frisch and Bob Wilson) to the **future of the LHC and of CERN**

# Remarks

The **status of PERLE is very encouraging**, many colleagues are to be congratulated and thanked!

The Collaboration has received not only increasing attention but also a number of hardware contributions, without which we would be in a really difficult state.

Despite iSAS and higher expectations on CNRS, **it is clear that we miss 20% (about 4 M€) in order to complete the one-loop PERLE. With a further about 4-5 M€ we could go directly to the 3-loop configuration which is PERLE's declared goal.** This requires that all PERLE member Institutes (and possible new members) think now anew and harder about their financial and/or in kind contributions to what is becoming a flagship ERL development facility. This will be discussed in bilateral meetings with IJClab.

With a general view on how our community works and a special view on the European Strategy Update we shall continue to realise that **time is a crucial parameter**. It is not impossible that suddenly there appears a call to indeed use ERLs for a next collider (ep at CERN, ee?) to which PERLE promises (to some extent bERLinPRO too) to have the technology at hand.

We propose to have a next PERLE Collaboration Meeting in at CERN in June.

## Beam Dynamics Driven Design of PERLE

S.A. Bogacz\*

*Center for Advanced Studies of Accelerators,  
Jefferson Lab, Newport News, USA*

K.D.J. André,<sup>†</sup> O. Brüning, and B.J. Holzer  
*CERN, Meyrin, Switzerland*

B.R. Hounsell<sup>‡</sup> and M. Klein  
*University of Liverpool, Liverpool, United Kingdom*

B.L. Militsyn<sup>§</sup> and P.H. Williams<sup>§</sup>  
*STFC Daresbury Laboratory, Sci-Tech Daresbury, Warrington, United Kingdom*

G. Pérez Segurana,<sup>¶</sup> I. Bailey,<sup>§</sup> R. Apsimon,<sup>§</sup> and S. Setiniyaz\*\*  
*Lancaster University, Bailrigg, Lancaster, United Kingdom*

R. Abukeshek, C. Barbagallo,<sup>¶</sup> M. Ben Abdillah, C. Bruni, P. Duchesne, P. Duthil, A. Fomin, C. Guyot, W. Kaabi, J. Michaud, G. Olry, L. Perrot, D. Reynet, R. Roux, A. Stocchi, and S. Wurth  
*Université Paris-Saclay, CNRS/IN2P3 IJCLab, Orsay, France*

H. Abualrob<sup>††</sup>  
*An-Najah National University, Nablus, Palestine*

M. Baylac and F. Bouly  
*Laboratoire de Physique Subatomique et de Cosmologie (LPSC) Université Grenoble-Alpes, CNRS/IN2P3, France*

B. Jacquot  
*Grand Accélérateur Nat. d'Ions Lourds (GANIL), France*  
(Dated: March 6, 2024)

PERLE (Powerful ERL for Experiments) is a novel Energy Recovery Linac (ERL) test facility [1], designed to validate choices for a 50 GeV ERL foreseen in the design of the Large Hadron Electron Collider (LHeC) and the Future Circular Collider (FCC-eh), and to host dedicated nuclear and particle physics experiments. Its main goal is to demonstrate high current, continuous wave (CW), multi-pass operation with superconducting cavities at 802 MHz. With very high beam power (10 MW), PERLE offers an opportunity for controllable study of every beam dynamic effect of interest in the next generation of ERLs and becomes a 'stepping stone' between present state-of-art 1 MW ERLs and future 100 MW scale applications.

← A great paper accepted by PRAB

Dear Alex,

We are pleased to inform you that we have selected your ... accepted manuscript to be a PRAB Editors' Suggestion. A small fraction of papers which we judge to be particularly important, interesting, and well written is chosen for an Editors' Suggestion. Congratulations on your outstanding paper!

Following our CDR, this paper has triggered thoughts about our publication and authorship policies, which we do not have but may need for the organisation of our future work and its (re)presentation.

Some initial thoughts for *light* policies below. Please send comments to these by the end of March.

## **PERLE Publication Policy – Journal Papers – DRAFT 8.3.2024 for discussion**

1. The PERLE Collaboration publishes its results jointly, i.e. apart from possible exceptions all papers are signed by all members of the Collaboration qualified for authorship.
2. The authors are listed alphabetically according to their family names. The genuine leader of the work shall appear as first author.
3. Papers may also be signed by colleagues who are not members of the PERLE Collaboration but made significant contributions to a paper.
4. Drafts of papers shall be circulated to the Collaboration with usually two weeks of time to submit comments to the author(s). Submission of a paper to the journal requires that the comments have been dealt with.
5. The Collaboration Board invites a member of PERLE as *Publications Coordinator*, who in doubt will contact the Spokesperson and Deputy to resolve possibly open questions.

## **PERLE Policy – Conference Attention and Proceedings – DRAFT 8.3.2024 for discussion**

1. Proceedings contributions are prepared and signed by the speaker. The speaker signs with his name adding 'on behalf of the PERLE Collaboration'.
2. Speakers are usually invited on a personal basis which the Collaboration shall accept. It should, however, be ready to provide a candidate speaker for talks if desired, and it also should be active in approaching conference organisers in time to offer PERLE contributions.
3. In order to ensure the demands from 2), the Collaboration Board invites a member of PERLE to coordinate its conference activities as are necessary and useful for the Collaboration to be part of the international accelerator community.
4. The *Conference Coordinator* together with the Publications Coordinator will develop and maintain a web page which contains all PERLE conference and journal contributions, slides and proceedings, international and national.
5. Talks at national meetings shall normally be handled by the national PERLE members.
6. Exceptionally, a proceedings contribution may have more than one author, if, for example, a small group was intimately involved in the results presented.
7. Proceedings writeups shall be circulated for information to the Collaboration with one week of time for possible comments. Such comments shall take into account and respect the also personal character of a writeup.

## **PERLE Authorship Policy – DRAFT 8.3.2024 for discussion**

1. PERLE journal papers are signed by all members of the PERLE Collaboration qualified as authors.
2. Each participating institution of PERLE provides a list of names of PERLE members whose activities justify to be included in the author list.
3. The PERLE author list is maintained by the Publications Coordinator. It is annually updated, but may also change in between the update dates.
4. A PERLE author may ask to withdraw his/her name from an individual paper for any reason not necessarily to be explained to the Publications Coordinator.
5. Individual papers may also be signed by colleagues who are not members of the PERLE Collaboration but made significant contributions to a paper.
6. Possible conflicts shall be brought to the attention of the Spokesperson and Deputy, who have the final say in case of continuing disputes that need a resolution.