ERL Status and Next Steps

Max Klein, Andrew Hutton

ERL Panel Members

Deepa Angal-Kalinin[6], Kurt Aulenbacher[10], Alex Bogacz[15], Georg Hoffstatter[5], Andrew Hutton[15] (Co-Chair), Erk Jensen[4], Walid Kaabi[11], Max Klein[9] (Chair), Bettina Kuske[1], Frank Marhauser[15], Dmitry Kayran[3], Jens Knobloch[1], Olga Tanaka[14], Norbert Pietralla[7], Cristina Vaccarezza[8], Nikolay Vinokurov[2], Peter Williams[6], Frank Zimmermann[4]

Apologies: Bettina, Georg, Kurt, Frank

Invited: Jan (thank you)

ERL Panel Meeting 5.5.2021

Townhall Meeting

Present the Roadmap development to the community at large. At this stage: mainly present the White Paper, and look for reaction, comments. **Our suggested roadmap**: Concert, new facilities and R+D for ERL based HEP Colliders (ep and ee). Main demand is for the 10MW challenge to be solved: high current sources, high quality SRF, high energy (multi-turn)…

Tentative Agenda for ERL Townhall Meeting

Opening	10’	Dave N
Introduction	10’	Max K
Facilities	30’	Andrew H
High Intensity Sources	30’	tbc
SCRF Developments	30’	Bob R
short break 10’		
High Energy Colliders in ERL Mode	30’	Oliver B
Low Energy Physics with ERL	30’	Jan B
Industrial Applications	30’	Peter W
Energy Recovery and Sustainability	30’	Erk J

Speaker names in blue – tbc; 30’ = 20+10, or 15+15

Date: Friday 4. June 13-17 o’clock CET ?

Invitation via several mailing lists

- ERL Atoosa Meseck
- rECFA Max [national contacts]
- EP CERN (Manfred Krammer)
- Any other?

ZOOM, recorded

Paper Authors

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Guest Authors

Michaela Arnold[7], Steve Benson[15], Jan Bernauer[13], Maarten Boonekamp[12], Oliver Brüning[4], Patxi Duthill[11], Oliver Fischer[9], Bernhard Holzer[4], Geoff Krafft[15], Boris Militsyn[6], George Neil[15], Axel Neumann[1], Vladimir Litvinenko[13], Bob Rimmer[15], Nick Shipman[4], Hubert Spiessberger[10], David Verney[11], Valeri Telnov[2], Chris Tennant[15] and others

Suggest to make this a uniform authorlist in alphabetic order is that ok?, list the panel somewhere
Please make sure your contributing colleague appears here. Needs checking overleaf, recompile!
Also PhD students, a chance for a peer reviewed publication, rare for accelerator students

Paper ToC 5.5.21 – rather stable

Chapter 1

Introduction - 5p

1.1 The Magic Principle of Energy Recovery, its Promises and Past

Andrew Hutton, Steve Benson, George Neil

Draft 1 exists

from Tigner [1] .. to high brightness, high energy e beams at hugely reduced power consumption..

1.2 Science Goals and Requirements

Max Klein, Frank Zimmermann

NO comment means that Andrew or I have not seen nor heard of text/draft, which yet may exist

ERL - Facilities and Current Status - 20p

Intro - Andrew Hutton

2.1 Completed Facilities

2.1.1 ALICE at Daresbury

Received today

Deepa Angal-Kalinin, Peter Williams

2.1.2 JLab FEL

←?

George Neil, Steve Benson

2.1.3 CEBAF Single Pass

Draft 1 exists

Alex Bogacz

2.2 Ongoing Activities

←?

2.2.1 sDALINAC at Darmstadt

Michaela Arnold, Norbert Pietralla

2.2.2 bERLinPRO

Draft 1 exists

Jens Knobloch, Bettina Kuske, Axel Neumann

2.2.3 cERL at KEK

Draft 1 exists

Olga Tanaka

2.2.4 Recuperator at Novosibirsk

Nikolay Vinokurov

Draft in overleaf

2.2.5 CBETA at Cornell

←?

Georg Hoffstatter

Chapter 2

Chapter 3

ERL - New Facilities in the Twenties - 20p

Intro - Max Klein

3.1 Europe

3.1.1 MESA at Mainz ←?

Kurt Aulenbacher

3.1.2 PERLE at Orsay

Oliver Bruening, Walid Kaabi ←?

3.2 Non-European Facilities

3.2.1 CEBAF 5-Pass at Jlab

Alex Bogacz

Draft 1 exists

3.2.2 Electron Cooler at BNL ←?

Dimitry Kayran, Vladimir Litvinenko

Key Challenges - a Concerted Effort - 30p

Intro - Andrew Hutton

4.1 Injectors

Draft 1 exists, now combined section

Boris Militsyn,Cristina Vaccarezza, Bettina Kuske, Olga Tanaka

4.1.1 Electron Sources

4.1.2 Beam Transport to Recirculator

4.2 High Quality SRF: Cavity and Cryomodules ←?

Frank Marhauser, Erk Jensen, Bob Rimmer

4.3 Multi-turn Operation and the Art of Arcs

Draft 1 exists (?)

Alex Bogacz, Peter Williams

4.4 ERL Operation Challenges

Draft in overleaf

Chris Tennant

4.5 Interaction Region ←?

Kurt Aulenbacher, Steve Benson

4.6 Power to ERLs ←?

Erk Jensen, Nick Shipman

4.7 Cryogenics ←?

Patxi Duthil

Chapter 4

Energy and Intensity Frontier Physics - 30p

Intro - Max Klein

5.1 High Energy Colliders

5.1.1 LHeC and FCC-eh

Max Klein, Alex Bogacz, Bernhard Holzer

5.1.2 FCC-ee as an ERL

Dimitry Kayran, Vladimir Litvinenko,

5.1.3 ILC as an ERL

Valery Telnov, Andrew Hutton

5.1.4 Photon-Photon Collider

Frank Zimmermann

5.2 Low Energy Particle Physics

5.2.1 Elastic Electron-Hadron Scattering

Jan Bernauer

5.2.2 Weak Interaction at Low Energy

Hubert Spiessberger, Kurt Aulenbacher, Maarten Boonekamp

5.2.3 Dark Photons

Oliver Fischer, Steve Benson, Jan Bernauer

5.3 Low Energy Nuclear Physics

David Verney

5.4 Photo-Nuclear Physics

Norbert Pietralla, Geoff Krafft

Chapter 5

Not seen any text

Chapter 6

Applications - 15p

Intro - Andrew Hutton

6.1 ERL Driven High Power FEL

Frank Zimmermann

6.2 EUV-FEL Semiconductor Lithography

Peter Williams, George Neil

6.3 ICS Gamma Source

Peter Williams

河田様、cc：クリャイン様、ハットン様
いつも大変お世話になっております。
織雅です。

お忙しいところ大変申し訳ございませんです。
連休中にEUV-FELのレフェレンスの伺いの続きですが。
先程のERL roadmapの原橋には
「EUV-FEL Semiconductor Lithography」のチャプタが入っています。
まだまだ作成中なんです
このチャプターに対して、エクスパートとしてのコメントを
してくれれば、幸せです。
このようなお願いできますでしょうか？

お手数ですが、どうぞよろしくお願い申し上げます。

織雅

← Japan may join in

Not seen any text

Chapter 7

ERL and Sustainability - 10p

Andrew Hutton, Erk Jensen, Olga Tanaka, Nick Shipman

7.1 Introduction

Power consumption

7.2 Beam Energy Recovery

as one of the main elements of a green accelerator concept.

7.3 Technology and Infrastructure

Not seen any text

Chapter 8

Conclusions - 5p

Acknowledgement

Thanks

Chapter 9

Appendix - ERL Facilities - 5p

Andrew

All there but needs checks and slight reordering

Next Steps

- Main priority is to now write as there are 2 weeks left to May 17.
- We are uncertain about the need to hold extended, topical panel meetings [were foreseen for 12/17.]
- Next meeting Monday 17 to discuss status [2pm CET?]
- Another meeting prior to the Townhall meeting (date to be seen)
- We propose to establish a small group to evaluate in detail the new e+e- collider proposals
  because our panel has to provide an opinion about their possible realisation
  This group shall be built by some panel members and be open to all, deadline: 15.9.2021 (tbc)
- … ?