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EuCARD

European Coordination for Accelerator Research and Development
Seventh Framework Programme, Capacities Specific Programme, Research Infrastructures,
Combination of Collaborative Project and Coordination and Support Action

DELIVERABLE REPORT

WORK PACKAGE ACTIVITY REPORT FOR PERIOD 3

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Abstract:

A report of the work performed during period 3 in Work Package 4 “Accelerator Science Networks” of the EuCARD project (the last 15 months - 1 April 2012 until 31 July 2013) including the work progress and the use of the resources.

Executive Summary

During the last year of the EuCARD project the WP4 accelerator networks organized or co-organized 25 well-attended workshops in various fields of accelerator science with concrete outcome. Topics addressed in dedicated meetings included quench behaviour of superconducting magnets, optics correction, space charge and electron-cloud diagnostics LHC, LHC injectors, and FAIR, and RF technologies, e.g. high-efficiency RF power sources, modeling, and costing. In addition, stimulated by the discovery of the “Higgs boson” at two LHC experiments, in several mini-workshops, WP4 explored accelerator options for high-energy frontier colliders which would allow precision measurements of this particular novel particle, including circular e^+e^- (LEP3, TLEP), electron-hadron (LHeC, TLHeC, VHE-LHeC), gamma-gamma (SAPPHiRE) and higher-energy hadron colliders (HE-LHC, VHE-LHC). A new 80 or 100-km long tunnel would allow hosting several of these colliders consecutively or in parallel, and would support an attractive rich physics programme spanning at least half a century. Looking further into the future, a first large European event on novel accelerator concepts was organized as a first step towards assembling the community and building a real accelerator based on advanced techniques.

PUBLISHABLE SUMMARY



European Coordination for Accelerator Research and Development

The accelerator networks (**WP4-AccNet**) have advanced key issues for the LHC, the LHC injector complex, FAIR, and future high-energy frontier circular colliders beyond the LHC; for RF technologies; and for advanced acceleration schemes. Over the reporting period, 25 workshops, mini-workshops and working meetings were organized or co-organized, attracting world experts, and producing concrete results. Topics addressed included for example quench behaviour of superconducting magnets, optics corrections for LHC & HL-LHC, crab cavities, and electron-cloud measurements, modeling and mitigation; design parameters for future circular e^+e^- or hadron collider Higgs factories and a long-term strategy for high-energy frontier accelerators; laser-system and FEL options for a future $\gamma\gamma$ Higgs factory based on a recirculating linac “SAPPHiRE”; solid-state amplifiers, low-level RF for SC linacs, and RF costing techniques; and coordinating the plasma-accelerators community with the purpose of transiting from demonstrations of principle to concrete accelerator projects. The WP4 networks have supported a significant number of expert exchanges, including from non-EU countries. They have generated or strengthened collaborations of European accelerator institutes with the European Space Agency and its partners, with several Mexican institutes, and with a number of key universities in Japan (Hiroshima, Kyoto, Tohoku).

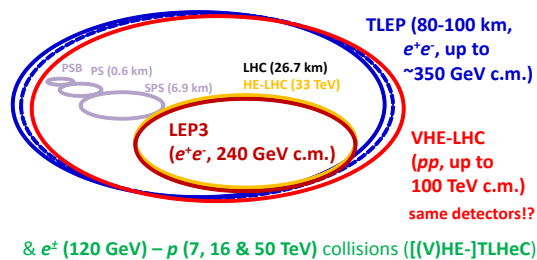


Figure XX: A possible long-term strategy for High Energy Physics, emerging from the WP4 AccNet studies and workshops.

1. PROJECT OBJECTIVES FOR THE PERIOD

The main goals of the **scientific networks** (WP3 and WP4) during his period were to finalize and complete their activities: for WP3, the ...

For WP4 AccNet, the goal was to bring together the accelerator scientists of Europe and the rest of the world to contribute to upgrades of hadron accelerators and to a strategy for high-energy circular colliders (AccNet-EuroLumi), and to the development of RF technologies (AccNet-RFTech). To these contractual goals, a new one had been added in 2010, oriented towards organizing the plasma wakefield acceleration community. A significant number of milestones and two deliverables are attached to these goals: [M4.1.2](#), [M4.1.3](#), [M4.2.2](#), [M4.2.3](#), [M4.3.2](#), [D4.3.2](#), [M4.3.3](#), [M4.4.1](#), [M4.4.2](#), [D4.4.1](#), [D4.4.2](#), [M4.4.3](#).

1.1. WP4: ACCELERATOR SCIENCE NETWORKS (ACCNET)

AccNet is the project platform for exchange, investigations and assessment of accelerator upgrades, technologies and new infrastructures. It includes four tasks:

- Task WP4.1: Coordination and communication
- Task WP4.2: EuroLumi network (accelerator performance)
- Task WP4.3: RFTech network (RF technologies)
- Task WP4.4 EuroNNAc (novel accelerators): new additional task since 2010.

- **Task WP4.1: Coordination and communication**

Progress towards objectives

At the 12th meeting of the EuCARD Steering Committee on 6 December 2012 the status and plans of AccNet were reported. Since summer of 2012 AccNet-EuroLumi launched and supported studies on various novel types of Higgs factories, such as circular $e+e^-$ colliders (LEP3, TLEP), $\gamma\gamma$ collider, a high-luminosity ep collider based on the LHC, as well as higher-energy hadron colliders (HE-LHC, VHE-LHC), either in the LHC tunnel and in a new 80-100 km tunnel. Presentations featuring and disseminating results of AccNet studies were given at various occasions during this period, e.g. at invited seminars at Oxford, KEK, Frascati, Saclay, Orsay, Sendai, CHIPP, oPAC workshop.

In total 25 AccNet mini-workshops and AccNet co-sponsored conferences have been organized, e.g. on LEP3 and TLEP (5 mini-workshops), on VHE-LHC, on SAPHIRE, on electron cloud, on LHC optics, on LLRF for X-FEL, on the use of μ CTA for industry and research, and low-level RF for XFEL, and on advanced acceleration concepts.

The AccNet web site was continually updated and expanded. Budget and manpower plans were also updated and adjusted.

Contractual milestones and deliverables

The fourth annual AccNet steering committees (M4.1.4) was held during the parallel sessions of the EuCARD13 Annual Meeting.

Planning, deviations and corrective actions

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|------------------|---|-------------------|--|-------------|--|-------------------|--|
| Task on schedule | √ | Ahead of schedule | | Minor delay | | Significant delay | |
|------------------|---|-------------------|--|-------------|--|-------------------|--|

Estimate of use of resources

| Partner | Personnel | | | | | Material | | | | |
|---------|-----------|---|---|---|----|----------|---|---|---|----|
| | ++ | + | = | - | -- | ++ | + | = | - | -- |
| CERN | | | * | | | | | * | | |
| CNRS | | | * | | | | | * | | |
| GSI | | | * | | | | | * | | |

1.2. TASK WP4.2: EUROLUMI

Progress towards objectives

The topical workshops were organized by EuroLumi either alone or in collaboration with EU and non EU partners wherever relevant. Important EuroLumi partners from outside Europe are the consortium of US national accelerator laboratories US-LARP, the KEK accelerator laboratory and Hiroshima University in Japan, and CINVESTAV Mexico, The goal of the topical workshops typically was to assemble 30 to 40 world experts for brainstorming on advanced topics. In most cases, the attendance exceeded this goal, demonstrating the added value of this format of networking. In all workshops, the fraction of participants originating from outside EuCARD was significant, typically 25%, sometimes above 50%. Events were often organized at CERN in view of its numerous facilities, lower costs and easy air flight connections to most world destinations, and since the main topic of EuroLumi – the LHC upgrade – is directly linked to CERN.

| # | Topic | Organizers | Time | Place | Registrants |
|---|-------------------------------------|---|-------------------|------------------------|---|
| 1 | Electron Cloud | INFN-LNF, INFN-Pisa CERN LER, EuroLumi | 5-9 Sep. 2012 | La Biodola, Italy | 62 from EU, US, Japan |
| 2 | Computing in Accelerator Physics | U. Rostock, EuroLumi, RFTech, CST | 19-25 Sep 2012 | Warnemünde, Germany | about 100 from EU, US, Russia, and Japan |
| 3 | LEP3 & TLEP | EuroLumi | 18 June 2012 | CERN | ~30 from EU, US, Russia, Japan |
| 4 | LEP3 & TLEP | EuroLumi | 23 Oct. 2012 | CERN | ~35 from EU, US, Japan |

| | | | | | |
|----|--------------------|--|-----------------|----------|--|
| 5 | HL-LHC | EuroLumi, LARP, HiLumi LHC | 14-16 Dec. 2012 | Frascati | 130 from EU, US, Japan |
| 6 | TLEP | EuroLumi | 10 Jan. 2013 | CERN | ~40 from EU, US, Russia, Japan |
| 7 | SC Magnet Quenches | HiLumi LHC, EuCARD WP7 (HFM), EuroLumi | 15-16 Jan. 2013 | CERN | 60 from EU, US, Japan |
| 8 | SAPPHiRE | EuroLumi | 19 Feb. 2013 | CERN | 25 from EU, US, Japan, Russia |
| 9 | VHE-LHC | HiLumi, EuroLumi, US-Snowmass | 21-22 Feb. 2013 | CERN | ~50 from EU, US |
| 10 | TLEP | EuroLumi | 4 May 2013 | CERN | 27 from EU, US, China |
| 11 | Space Charge | EuroLumi, ICFA, HICforFAIR, LIU | 16-19 Apr. 2013 | CERN | 83 from EU, US, Japan, China, Mexico, Russia |
| 12 | LHC Optics | EuroLumi, HiLumi | 17-18 Jun 2013 | CERN | 53 from EU, US |
| 13 | TLEP | EuroLumi, LPC, FNAL | 25-27 Jul. 2013 | FNAL | 54 from US, EU, Russia, Japan, Mexico |

Workshop 3, attended by the CERN Director of Accelerators & Technology as well as by the KEK “trustee” in charge of strategy, was the first ever workshop discussing the possibility of a circular Higgs factory in the LHC tunnel or in a new 80 or 100 km tunnel. It was followed by four similar mini-workshops in 3-month rhythm (workshops 4, 6, 10 and 13), making rapid progress on the accelerator design. Workshop 8 was the first ever event devoted to a low-cost $\gamma\gamma$ Higgs factory, and workshop 9 the first one devoted to 100-TeV pp collider in a new large tunnel. Together these workshops developed a cost-efficient staged strategy towards delivering highest-energy highest-luminosity collisions of various species to study the Higgs boson with the best possible precision and to explore the closure of the standard model and to discover New Physics. Workshops 1, 5, 7, 11, and 12 addressed important aspects of the HL-LHC design, the LHC injector upgrade, and FAIR. One example outcome of these workshops was the stronger collaboration with the European space satellite community assembled around ESA. Another was a novel technique of electron cloud diagnostics, developed by the CERN-GSI collaboration in the framework of EuroLumi, by which the average electron cloud density around a storage ring is inferred from the bunch-by-bunch synchronous phase shift.

During this period, several invited talks on the LHC upgrade plans and future high-energy colliders were given at Oxford, KEK, INFN Frascati, LAL Orsay, CEA Saclay, Sendai/Japan, Sursee/Switzerland, and CERN.

During the 3rd period, AccNet-EuroLumi supported or organized a number of exchanges of scientists and joint studies to mutual benefits.

- The Mexican doctoral students H. Maury (CINVESTAV/Merida), B. Yee (CINVESTAV/Mexico City) and C. Valerio (CINVESTAV/Sonora) for simulations of electron-cloud effects in the LHC arcs and in the HL-LHC, for simulation of HL-LHC crab-cavity failures, and for contributions to the development of a high-intensity H- source for CERN Linac4, respectively.
- The US-LARP physicist C. Bhat (FNAL) for the study of the generation & stability of long flat bunches, including machine studies.
- The Japanese expert K. Ohmi (KEK) for beam-beam, space-charge, and electron-cloud simulation studies for LHC upgrade and for LEP3 & TLEP.
- US specialist M. Bai (BNL) for discussions on optics diagnostics and optics modeling for high-intensity proton rings.
- The Italian surface scientist R. Cimino (INFN-LNF) for new ideas on electron-cloud mitigation, e.g. using in-situ fullerene coatings.
- US specialists T. Sen (FNAL), V. Litvinenko (BNL) and EU specialists D. McGinnis (ESS), S. Petracca (U. Sannio) and R. Cimino (INFN-LNF) for discussions on highest-energy proton-proton or proton-antiproton colliders, including specialized topics like metallic foams.
- US specialists U. Wienands (SLAC), R. Talman (Cornell), V. Danilov (ORNL), A. Fasso (SLAC & TJNAF, ret.), and R. Rimmer (TJNAF); Russian specialist V. Telnov (BINP); Chinese specialist Q. Qin (IHEP); Japanese specialist K. Oide (KEK); and EU experts R. Assmann (DESY) and M. Boscolo (INFN-LNF) for discussions on circular e^+e^- Higgs factories.
- EU experts K. Moenig (DESY/Zeuthen), F. Zomer (LAL), A. Variola (LAL), L. Corner (Oxford), Y. Zaouter (Amplitude Systems), and US experts V. Yakimenko (SLAC), V. Litvinenko (BNL) and J. Gronberg (LLNL) for discussions on a high-power laser system, optical cavities, and FEL options for SAPPHiRE.

Contractual milestones and deliverables

Following an optimization of the strategy presented in the report of Period 1, the annual workshop corresponding to milestone M4.2.4 was replaced by more than ten topical workshops and a session in a conference, as described in the table of events above.

Planning, deviations and corrective actions

| | | | | | | | |
|------------------|--|-------------------|---|-------------|--|-------------------|--|
| Task on schedule | | Ahead of schedule | √ | Minor delay | | Significant delay | |
|------------------|--|-------------------|---|-------------|--|-------------------|--|

Estimate of use of resources

| Partner | Personnel | | | | | Material | | | | |
|---------|-----------|---|---|---|----|----------|---|---|---|----|
| | ++ | + | = | - | -- | ++ | + | = | - | -- |
| CERN | | | * | | | | | * | | |

1.3. TASK WP4.3: RFTECH

Progress towards objectives

The RFTech network follows the pattern of events anticipated in the contract, with, in addition, participation in external events tightly linked to the RFTech objectives, plus a few topical workshops.

| # | Topic | Organizers | Time | Place | Registrants |
|---|---------------------------------------|-----------------------------------|----------------|---------------------|--|
| 1 | Integrated Circuits for Low Level RF | RFTech | 24-26 May 2012 | Warsaw / Poland | ~300 |
| 2 | Higher Order Modes in SC RF | CI, ICFA, ASTeC, IoP, RFTech | 25-27 Jun 2012 | Daresbury/ UK | 59 |
| 3 | Advanced Low Level RF Control | RFTech | 6-8 Aug 2012 | Lodz / Poland | 43 |
| 4 | Computing in Accelerator Physics | U. Rostock, EuroLumi, RFTech, CST | 19-25 Sep 2012 | Warnemünde, Germany | about 100 from EU, US, Russia, and Japan |
| 5 | Low Level RF for XFEL | RFTech | 19-21 Feb 2013 | Swierk/ Poland | 55 |
| 6 | 4 th Annual RFTech Meeting | RFTech | 24-26 Feb 2013 | Annecy/ France | 33 |

These workshops provided excellent opportunities to share experience among several fields of RF technology, from low-level systems to solid-state power amplifiers.

More specifically, the 4th RFTech workshop covered a large range of RF topics, including C-band RF, X-band RF, reliability, LLRF, RF diagnostics, reliability, costing, breakdown, operation, klystron lifetime, and RF efficiency; and it also addressed RF issues for many important present or planned accelerator facilities, e.g. SPIRAL2, MYRRHA/MAX, CLIC, TESLA, ELI-NP, LHeC ERL, TLEP, LHC, FLASH, PS Booster, MedAustron, and SwissFEL. Participants came from DESY, CERN, INF-INFN, TUD, UROS, GANIL, PSI, LPSC/CNRS, UJF, TUL, and ISE-WUT.

RFTech also organized or co-organized several topical workshops related to low-level RF control, as well as special sessions at the MixDes2012 Conference on Mixed Design for Integrated Circuits and Systems with applications to accelerator RF systems, and at the ICAP'13 on accelerator RF related computing. Some RFTech experts also attended the IEEE Conference workshop on Real Time techniques, RT2012, in June 2012.

An important result is a (so far draft) report on strategy/results for cavity design, LLRF & HPRF systems and design integration, and costing tools.

Contractual milestones and deliverables

- M.4.3.4 – The fourth annual RFTech workshop was organized in February 2013 at Annecy (France), located halfway between CERN/Geneva and ESRF/Grenoble

Planning, deviations and corrective actions

| | | | | | | | |
|------------------|---|-------------------|--|-------------|--|-------------------|--|
| Task on schedule | √ | Ahead of schedule | | Minor delay | | Significant delay | |
|------------------|---|-------------------|--|-------------|--|-------------------|--|

Estimate of use of resources

| Partner | Personnel | | | | | Material | | | | |
|---------|-----------|---|---|---|----|----------|---|---|---|----|
| | ++ | + | = | - | -- | ++ | + | = | - | -- |
| CERN | | | * | | | | | * | | |
| DESY | | | * | | | | | * | | |
| UJF | | | * | | | | | * | | |

1.4. TASK WP4.4: EUROMNAC

EuroNNAc – a European Network for Novel Accelerators looking at the Next Generation of Novel Electron Accelerators – was launched in December 2010 on EuCARD initiative.

Progress towards objectives

The second major EuroNNAc workshop was held at CERN, on 2-4 May 2012. It created four task forces towards an EU-wide (or even global) coordination of advanced accelerators, defined strategies and detailed plans for each task force, progressed towards a coherent proposal of one or a few European and international pilot facilities for advanced accelerators; prepared a written report on novel acceleration and the EuroNNAc network; approved plans for a European conference for advanced accelerators (the first one EAAC2013), and prepared an input statement to European Strategy for Particle Physics ("On the Prospect and Vision of Ultra-High Gradient Plasma Accelerators for High Energy Physics").

EuroNNAc organized the first ever EAAC conference, in Italy from 2 to 7 June 2013, with 145 participants. Its main conclusion was that substantial extra funding is needed to accomplish the EuroNNAc goal of a distributed European test facility.

Contractual milestones and deliverables

The new network fulfilled all of its voluntary milestones and deliverables:

- M4.4.3: second annual workshop, held at CERN on 2-4 May 2013.

Planning, deviations and corrective actions

| | | | | | | | |
|------------------|---|-------------------|--|-------------|--|-------------------|--|
| Task on schedule | √ | Ahead of schedule | | Minor delay | | Significant delay | |
|------------------|---|-------------------|--|-------------|--|-------------------|--|

Estimate of use of resources

| Partner | Personnel | | | | | Material | | | | |
|---------|-----------|---|---|---|----|----------|---|---|---|----|
| | ++ | + | = | - | -- | ++ | + | = | - | -- |
| CERN | | | * | | | | | * | | |
| DESY | | | * | | | | | * | | |
| CNRS | | | | * | | | | | * | |

2. PROJECT PUBLICATIONS DURING THE PERIOD

| WP 4.1 (Periods 1+2: 28 publications) | |
|---------------------------------------|--|
| 1. | F. Zimmermann, <i>LHC Status & Plan</i> , LAL Orsay, 28 June 2013, EuCARD-PRE-2013-008 |
| 2. | F. Zimmermann, <i>Circular Higgs Factories & Possible Long-Term Strategy</i> , oPAC Grand Challenge workshop, CERN, 26 June 2013, EuCARD-PRE-2013-007 |
| 3. | F. Zimmermann, <i>High-Energy Frontier Circular Colliders</i> , Annual CHIPP Meeting, Sursee, 25 June 2013, EuCARD-PRE-2013-006 |
| 4. | F. Zimmermann, <i>Summary of EuCARD WP4 Accelerator Science Networks "AccNet" 2009-2013</i> , EuCARD2013 Final Annual Meeting, CERN, 10 June 2013, EuCARD-PRE-2013-009 |
| 5. | F. Zimmermann, <i>HL-LHC Accelerator</i> , Higgs & Beyond Conference Tohoku University, Sendai 7 June 2013, EuCARD-PRE-2013-005 |
| 6. | F. Zimmermann, "TLEP" - <i>Circular Higgs Factory and a Long-Term Perspective for High Energy Physics</i> , Accelerating News Issue 5 (Spring 2013) |
| 7. | F. Zimmermann, <i>Targeting the Energy Frontier for next Accelerators</i> , Accelerating News Issue 5 (Spring 2013): |
| 8. | F. Zimmermann, <i>TLEP - The Machine</i> , LAL 22 March 2013, EuCARD-PRE-2013-003 |
| 9. | F. Zimmermann, <i>Circular Higgs Factories: LEP3, TLEP and SAPHIRE</i> , CEA Saclay 25 February 2013, EuCARD-PRE-2013-002 |
| 10. | F. Zimmermann, <i>A Circular e+e- Collider to Study H(125) Properties - Accelerator</i> , Frascati 14 February 2013, EuCARD-PRE-2013-001 |
| 11. | F. Zimmermann, <i>EuCARD WP4 Accelerator Networks</i> , Report at 12th EuCARD Steering Committee Meeting Uppsala & CERN, 6 December 2012 |
| 12. | F. Zimmermann, <i>Future Possibilities for Precise Studies of X125 - Higgs Factories</i> , CERN Colloquium, 22 November 2012, EuCARD-PRE-2012-002 |
| 13. | F. Zimmermann, <i>SAPHIRE & LHeC</i> , ICFA HF2012 workshop, FNAL, 16 November 2012, EuCARD-PRE-2012-006 |
| 14. | F. Zimmermann, <i>LEP3 and TLEP</i> , ICFA HF2012 workshop, FNAL, 15 November 2012, EuCARD-PRE-2012-007 |
| 15. | F. Zimmermann, <i>Circular Higgs Factories - LEP3, TLEP & Sapphire</i> , KEK Accelerator Laboratory Seminar, 6 November 2012 |
| 16. | F. Zimmermann, <i>Circular Higgs Factories - LEP3, TLEP & Sapphire</i> , Invited Seminar, Oxford University, 1 November 2012, EuCARD-PRE-2012-003 |
| 17. | F. Zimmermann, <i>Circulating ideas about a new Higgs factory</i> , Accelerating News Issue 3 (Autumn 2012): |
| 18. | R. Cimino, F. Zimmermann, <i>E-CLOUD12 sheds light on electron clouds</i> , CERN Courier (Autumn 2012): |
| 19. | F. Zimmermann, <i>The Future of Highest Energy Accelerators</i> , Invited Talk, SLAC 50th Anniversary, Scientific Symposium, 24 August 2012 |
| 20. | F. Zimmermann, <i>LHC - The Machine</i> , Invited Talk, 40th SLAC Summer Institute, 26 July 2012 |
| 21. | F. Zimmermann, <i>Status of the LHC and Future Plans</i> , Seminar Physics & Technology of Particle Accelerators, TU Darmstadt, 25 June 2012 |
| 22. | F. Zimmermann, <i>Report of WP4: AccNet</i> , 3rd EuCARD Annual Meeting, WUT, Warsaw, Poland, 25 April 2012 |
| WP 4.2 (Periods 1+2: 44 publications) | |

| | |
|-----|---|
| 1. | F. Zimmermann, <i>Bending and Focusing with Plasmas and Crystals - Potential and Challenges</i> , EuCARD'13 "Visions for the Future of Particle Accelerators," CERN, 11 June 2013. |
| 2. | M. Koratzinos, A.P. Blondel, R. Aleksan, O. Brunner, A. Butterworth, P. Janot, E. Jensen, J. Osborne, F. Zimmermann, J. R. Ellis, M. Zanetti, <i>TLEP: A High-Performance Circular e+e- Collider to Study the Higgs Boson</i> , Proc. IPAC'13 Shanghai, 12-17 May 2013, EuCARD-CON-2013-013 |
| 3. | K. Ohmi, F. Zimmermann, <i>Simulated Beam-Beam Limit for Circular Higgs Factories</i> , Proc. IPAC'13 Shanghai, 12-17 May 2013, EuCARD-CON-2013-012 |
| 4. | O. Dominguez, F. Zimmermann, <i>Electron-Cloud Maps for the LHC Scrubbing Optimization</i> , Proc. IPAC'13 Shanghai, 12-17 May 2013, EuCARD-CON-2013-011 |
| 5. | O. Dominguez, F. Zimmermann, <i>Beam Parameters and Luminosity Time Evolution for an 80-km VHE-LHC</i> , Proc. IPAC'13 Shanghai, 12-17 May 2013, EuCARD-CON-2013-010 |
| 6. | G.H.I. Maury Cuna, D. Sagan, G. Dugan, F. Zimmermann, <i>Synchrotron-Radiation Photon Distributions for Highest Energy Circular Colliders</i> , Proc. IPAC'13 Shanghai, 12-17 May 2013, EuCARD-CON-2013-009 |
| 7. | O. Brüning, M. Klein, S. Myers, J. Osborne, L. Rossi, C. Waaijer, F. Zimmermann, <i>Civil Engineering Feasibility Studies for Future Ring Colliders at CERN</i> , Proc. IPAC'13 Shanghai, 12-17 May 2013, EuCARD-CON-2013-008 |
| 8. | B. Yee-Rendon, R. Lopez-Fernandez, T. Baer, J. Barranco, R. Calaga, A. Marsili, R. Tomas, F. Zimmermann, <i>Machine Protection Studies for a Crab Cavity in the LHC</i> , Proc. IPAC'13 Shanghai, 12-17 May 2013, EuCARD-CON-2013-007 |
| 9. | G. Franchetti and F. Schmidt, <i>Summary of the Space Charge Workshop 2013 (SC-13)</i> , CERN, Geneva, 16-19 April 2013, EuCARD-REP-2013-001 |
| 10. | R. Cimino, G. Rumolo, F. Zimmermann, <i>Proceedings of E-CLOUD'12: Joint INFN-CERN-EuCARD-AccNet Workshop on Electron-Cloud Effects</i> , La Biodola, Isola d'Elba, Italy, 5-9 June 2012, EuCARD-CON-2013-001 |
| 11. | K. Ohmi, <i>Beam-Beam Simulations: Dynamical Effects and Beam-Beam Limit for LEP3</i> , CERN, 4 December 2012, EuCARD-PRE-2012-004 |
| 12. | K. Ohmi, <i>Beam-Beam Synchro-Beta Resonance</i> , CERN, 4 December 2012, EuCARD-PRE-2012-005 |
| 13. | G. Franchetti and F. Zimmermann, <i>New Approach to Resonance Crossing</i> , published in PRL 109, 234102 (2012), EuCARD-PUB-2012-009 |
| 14. | G. Franchetti, F. Zimmermann, <i>Space Charge and Electron Cloud Simulations</i> , Proc. ICAP'12 Warnemuende, 19-24 August 2012, p. 130, EuCARD-CON-2012-020 |
| 15. | T.L. Rijoff, F. Zimmermann, <i>Simulating the Wire Compensation of LHC Long-Range Beam-beam Effects</i> , Proc. ICAP'12 Warnemuende, 19-24 August 2012, p. 135, EuCARD-CON-2012-021 |
| 16. | R. Assmann, <i>Advanced Modeling and Measurements of LHC Beam Halo and Collimation</i> , presentation at Proc. ICAP'12 Warnemuende, 19-24 August 2012, EuCARD-PRE-2012-001 |
| 17. | G. Iadarola, G. Rumolo, <i>Electron Cloud Simulations with PyE-CLOUD</i> , Proc. ICAP'12 Warnemuende, 19-24 August 2012, p. 138, EuCARD-CON-2012-019 |
| 18. | T. Rijoff, <i>Testing Long Range Beam-Beam Compensation for the LHC Luminosity Upgrade</i> , Master Thesis, University of Milano, July 2012, EuCARD-DIS-2012-003 |
| 19. | R. Calaga, L. Ficcadenti, E. Métral, R. Tomás, J. Tückmantel, F. Zimmermann, <i>Proton-Beam Emittance Growth in SPS Coasts</i> , Proc. IPAC'12 New Orleans, 20-25 May 2012, p. 3737, EuCARD-CON-2012-011 |
| 20. | F. Zimmermann, Y. Iwashita, <i>Using Permanent Magnets to Boost the Dipole Field for the High-Energy LHC</i> , Proc. IPAC'12 New Orleans, 20-25 May 2012, p. 3578, EuCARD-CON-2012-010 |
| 21. | C.O. Domínguez, G. Arduini, E. Métral, G. Rumolo, F. Zimmermann, G. Iadarola, <i>Monitoring the Progress of LHC Electron-Cloud Scrubbing by Benchmarking Simulations and Pressure-Rise Observations</i> , Proc. IPAC'12 New Orleans, 20-25 May 2012, p. 3105, EuCARD-CON-2012-015 |

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| 22. | G. Franchetti, F. Zimmermann, <i>The Effect of Non-Zero Closed Orbit on Electron-Cloud Pinch Dynamics</i> , Proc. IPAC'12 New Orleans, 20-25 May 2012, p. 3033, EuCARD-CON-2012-014 |
| 23. | F. Zimmermann, M. Koratzinos, A.P. Blondel, M. Zanetti, <i>LEP3: A High Luminosity $e+e-$ Collider in the LHC Tunnel to Study the Higgs Boson</i> , Proc. IPAC'12 New Orleans, 20-25 May 2012, p. 2005, EuCARD-CON-2012-013 |
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| 3. | C. Zannini, G. Rumolo, <i>EM Simulations in Beam Coupling Impedance Studies: Some Examples of Application</i> , Proc. ICAP'12 Warnemuende, 19-24 August 2012, p. 190,): EuCARD-CON-2012-016 |
| 4. | T. Kozak, D. Makowski, A. Napieralski, <i>FMC-based Neutron and Gamma Radiation Monitoring Module for xTCA Applications</i> , MixDes2012 Conference, Warsaw, 24-26 May 2012, EuCARD-CON-2012-022 |
| 5. | A. Mielczarek, D. Makowski, G. Jabłoński, P. Perek, A. Napieralski, <i>Image Acquisition Module for uTCA Systems</i> , MixDes2012 Conference, Warsaw 24-26 May 2012, EuCARD-CON-2012-023 |
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| 7. | M. Grecki, <i>Joint Highlight Talk of WPs 4&10: Overview of the LLRF Developments for FLASH</i> , 3rd EuCARD Annual Meeting, WUT, Warsaw, Poland, 27 April 2012 |
| 8. | G. Burt, <i>Joint Highlight Talk of WPs 4&10: Compact Crab Cavities for LHC</i> , 3rd EuCARD Annual Meeting, WUT, Warsaw, Poland, 25 April 2012 |

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