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EuroCirCol
European Circular Energy-Frontier Collider Study
Horizon 2020 Research and Innovation Framework Programme, Research and Innovation Action

MEETING MINUTES

COORDINATION COMMITTEE MEETING

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Type: Management

Participants:
Present = ☑, Excused = ☐
☑ Roy Aleksan, ☑ Michael Benedikt (Chair),
☐ Luca Bottura, ☐ Olivier Brunner,
☑ Antoine Chance, ☑ Paolo Chiggiato,
☑ Julie Hadre (secretary), ☑ Bernhard Holzer,
☐ Jose Miguel Jimenez, ☐ Volker Mertens,
☑ Francis Perez, ☑ Daniel Schulte, ☑ Andrei Seryi,
☐ Rogelio Tomas Garcia, ☑ Davide Tommasini,
☑ Fernando Toral, ☑ Ricardo Torres,
☑ Frank Zimmermann

Link to Indico: https://indico.cern.ch/event/437515/

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1. OPENING, FOLLOW-UP AND TASKLIST

Michael Benedikt opens the third EuroCirCol Coordination Committee (ECC) Meeting at 13:00. The ECC is the executive body of the Project and coordinates the tasks of the Work Packages (WP).

The minutes of the second ECC meeting are approved without any further comment. (ECC02 Minutes)

1.1. ‘HIRING’ MILESTONE

The Milestone ‘Work packages groups established and hiring completed’ has been submitted on the H2020 portal on November 3rd 2015, and is also available on the EuroCirCol website: Hiring Milestone. Michael Benedikt thanks the WP leaders and deputies for their input and the ECC Coordination Committee approves the milestone without any further comments.

1.2. UPCOMING MILESTONES AND DELIVERABLES

Michael Benedikt details the milestones and deliverables for the next 6 months. The 6-months outlook and tasklist can be found on the EuroCirCol website (http://cern.ch/eurocircol, Menu item “Work Packages”, “WP1”, follow the “internal page link: ECC-Tasklist.

WP 1 is currently working on the milestone report M1.3 ‘QA, publication and communication plan’ that should be submitted by December 1st 2015. Michael Benedikt shows the members the draft report of the FCC Communication Strategy plan, which should establish a coherent communications architecture for the study.

WP 5 has to prepare the milestone report M5.2 ‘Baseline specifications and assumptions for accelerator magnet’ that should be submitted on the H2020 portal by April 1st 2016. Davide Tommasini points out that a review will take place in spring 2016, which will be useful to finalize that report.

1.3. REVIEW OF FCC-HH INJECTION ENERGY

Michael Benedikt presents the conclusions and recommendations for the review of the FCC-hh injection energy that took place on October 16th 2015. The injection energy is a critical parameter for the FCC-hh machine design. The choice of 3.3 TeV has been reviewed in order to either fixing a value or defining an energy range for more detailed analysis during the further Conceptual Design Study.

1.4. SCIENTIFIC DOCUMENTS PUBLICATION

Michael Benedikt reminds the WP leaders that a structure is dedicated to FCC and EuroCirCol on the CERN Document Server (CDS). All documents and data produced in the project must be made available as Open Access publication, free of charge. A direct link is available on the EuroCirCol website.

See also the Cheat Sheet on EDMS doc No 1374848 v.3.0. (login required)
1.5. **FCC WEEK 2016**

Michael Benedikt shows poster of the International Future Circular Collider Week 2016 conference (FCC Week 2016) will take place from 11 to 15 April 2015 in Rome, Italy. He invites the ECC members to attend the conference and encourages them to support also the participation and presentations of younger colleagues (students and post-docs). The announcement will be made in the coming weeks. There will also be a poster session. The draft program can be seen here: http://fccw2016.web.cern.ch/fccw2016/FCCWeek2016Agenda_v2.pdf

2. **WP1 PARAMETER UPDATE**

Daniel Schulte informs the members that information about the progress on the Milestone ‘Baseline specifications and assumptions for accelerator magnet’ will be reported later.

3. **WP1 COMMUNICATION UPDATE**

Ricardo Torres presents the FCC communication strategy. This document provides the guidelines for all the communication activities to be undertaken by the project coordination office and the partner institutions, in order to ensure the relevant stakeholders receive a coherent message.

An overview is given of the strategic themes, target audiences, objectives, key messages, and communication activities. The FCC communications network that will be established with the partners to coordinate the dissemination of the project is presented.
The role of the University of Liverpool is explained, and a plan of communication activities for the near future is shown. This includes articles in “Accelerating News”, “Spotlight On” series in the FCC website, FCC guide, EuroCirCol leaflet, and a stand in the industrial exhibition of IPAC’16. The participation of all the partners in the communication activities is strongly encouraged and input is demanded to create stories for the news section of webs and newsletters.

4. WP 2 CURRENT WORK, NEXT STEPS, SHOWSTOPPERS, COORDINATION NEEDS

Antoine Chance presents the status report on behalf of WP2.

Five new fellows have joined or are about to join the team:
- James Molson at LAL to work on collimation and tracking studies (Oct. 2015)
- David Boutin at CEA to work on lattice integration and dynamic aperture studies (Oct 2015)
- Andy Langner (50% WP2 & 50% WP3) to help with lattice integration, trade-offs between WP2 and WP3, operational considerations... (Dec 2015)
- Maria Ilaria Besana in the Fluka team to work on collimation
- Another fellow (50% WP2 50% WP3) for the integration of collective effects

A new version of the lattice (version V) has been deposited on the repository. The possibility of a space for the TSS has been looked at. First studies on the misalignments in the arcs as well as on the spurious dispersion correction have been started. Next steps are the version VI of the lattice after debugging and realization of alternative lattices.

Concerning the dynamic aperture, some errors were made in the dynamic aperture studies: the dipole errors were only taken into account for the small arcs. The implementation of dipole errors has been modified to correct this problem.

Antoine Chance reports the conclusions and outlook of the instability studies and informs about the status on electron cloud as well as on the design for both betatron and momentum collimation sections including optics.

5. WP 3 CURRENT WORK, NEXT STEPS, SHOWSTOPPERS, COORDINATION NEEDS

Andrei Seryi presents the status report on behalf of WP3. He starts with the hiring plans and status:

3 new people to work on the development of the interaction region lattice:
- Leon van Riesen-Haupt (PhD student, Oct 2015)
- Emilia Cruz Alaniz and Jose Abelleira Fernandez (Post Doc Jan-Feb 2016)

2 new Post Docs will be hired to work on the design of the machine detector interface.
Jorge Patrik Gonçalves (Post Doc) has started in August 2015 to study the beam-beam interaction.

WP3 is making progress with design work. Coordination links with MDI-detectors on the experiment side are established and the list of topics of mutual interest has been created and discussed.
6. **WP 4 CURRENT WORK, NEXT STEPS, SHOWSTOPPERS, COORDINATION NEEDS**

Francis Perez presents the WP4 status report. Concerning the hiring plans and status, 17 people are currently part of the work package and there are still 4 open positions to be filled in (2 Post Doc, 1 doctoral student and one project associate).

There is now a detailed planning that can be considered as a baseline:

- The study of vacuum systems for both 1.9 K and 4.5 K as cold bore temperatures;
- The experimental study at KIT is the most critical in term of manpower and duration. It is proposed to have a simplified set-up to profit as much as possible of the available ANKA beam time.

Finally there is some interface with the other work packages:

- Cold-bore diameter;
- Definition of working temperature: 1.9 vs 4.5 K;
- Impedance issues.

7. **WP 5 CURRENT WORK, NEXT STEPS, SHOWSTOPPERS, COORDINATION NEEDS**

Davide Tommasini presents the WP5 status report. The WP5 group is now established, the composition of the different teams should be reviewed by the end of 2016. Video meetings are scheduled once a month, this looks appropriate to the needs.

The evaluation of the design option is due by spring 2016. The design has been strongly affected by the baseline assumptions (in particular the margin, the performance of the conductor and the hypothesis for quench protection). Concerning the conductor performance, it has been decided to set more aggressive parameters than the initial ones, providing a $J_c$ of 1400 A/mm$^2$ @ 4.5K / 16T.

The status of WP5 will be submitted at least once a year (tentatively the springs of 2016-2017-2018-2019) to a Technical Review Committee (TRC), with the aim of focussing the baseline assumptions, design methods and solutions, technical strategies including cost analysis, towards a credible design for the FCC machine. The TRC will be chaired by Steve Gourlay.

Davide Tommasini concludes giving information about the CERNFCC Magnet Technology Program that is a 4-year program, parallel and synergetic to the EuroCirCol. The scope is the following:

- increasing the superconductor performance;
- designing, manufacturing and testing of ERMC and of RMM with enhanced HILUMI wire;
- procuring 50 km of state of the art high $J_c$ wires by June 2017, to be used for the development, manufacture and test of a demonstrator;
- designing, manufacturing and testing one demonstrator providing a magnetic field amplitude of 16T at 4.5K in a 50 mm aperture;
- procuring 100 km of accelerator quality high $J_c$ wires by June 2019, to be used for the manufacture of the 16T model dipole designed in the frame of the EuroCirCol. Winding would start by the end of 2019 with the aim of cold testing the magnet in 2021.
8. **PLANNED MEETINGS**

The list of upcoming EuroCirCol Coordination Committee meetings can be found here: [ECC-Meetings](#)

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<thead>
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<th>Title</th>
<th>Date</th>
<th>Location</th>
<th>Convener</th>
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<td>EuroCirCol Coordination Committee meeting 04</td>
<td>2016-02-11</td>
<td>CERN, Geneva, Switzerland</td>
<td>Michael Benedikt</td>
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<tr>
<td></td>
<td></td>
<td>Video/phone meeting</td>
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<tr>
<td>EuroCirCol Coordination Committee meeting 05</td>
<td>2016-04-13</td>
<td>Rome, Italy Crowne Plaza Hotel St. Piers</td>
<td>Michael Benedikt</td>
</tr>
<tr>
<td>EuroCirCol Coordination Committee meeting 06</td>
<td>2016-06-02</td>
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9. **AOB**

None

The meeting was closed at 14:00.