

Organization of Task 5.2: Study accelerator dipole magnet design options

F. Toral - CIEMAT



Summary

- Title: Study accelerator dipole magnet design options
- Participants: CEA, CERN, CIEMAT, INFN, KEK (?)

Milestones

MS-5.2 Baseline specifications and assumptions for accelerator magnet	M10
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Deliverables

D-5.1 Overview of magnet design options	M10
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Description

- The initial scheme was based on a first layout selection, followed by electromagnetic and mechanical studies performed sequentially by different teams.
- Now we have agreed that each participant will study one coil layout, both including electromagnetic and mechanical calculations, to choose one preferred option for further analysis (Task 5.4):
 - CEA: block design
 - CERN: review of the state of the art
 - CIEMAT: common coil design
 - INFN: cos-theta design



Remarks

- Cable grading is likely necessary to reduce the cost: high J_c and low J_c (even NbTi) blocks could be present.
- One must keep an eye on coil end effects from the beginning: minimum bending radius, Lorentz forces.
- The common coil layout is intrinsically a double aperture design.
- Electromagnetic design is not enough. We need to address the mechanical concept to take care of the huge electromagnetic forces.
- Some assumptions on cable properties are necessary at the very beginning for the electromagnetic calculations.



Timeline

- End of August: design parameters, constraints and evaluation criteria.
- End of October: first electromagnetic design.
- End of December: first mechanical design. Identification of problems for further analysis.
- End of March: Design report, including first considerations for coil-ends and fabrication feasibility.
- Within end of April: internal review and choice.