Minutes of the PANDA Magnet Meeting
EVO teleconference, 1 April 2011

Inti Lehmann

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This may be incomplete. Please don't hesitate to contact me with comments.

Participants

Andrea Bersani, Alexander Efremov, Evgeny Koshurnikov, Inti Lehmann, Bernd Lewandowski, Edward Lisowski, Yuri Lobanov, Jost Lühning, Herbert Orth, Renzo Parodi, Lars Schmitt and Alexander Vodopyanov

Please find the agenda and talks from the session in the PANDA Indico system.
`https://indico.gsi.de/conferenceDisplay.py?confId=1232` .

Minutes

Andrea presented a conceptual proposal how to support the TS platform which should distribute the weight on 4 wheels/carriages even with an uneven floor. His idea is to support 2 wheels rigidly while using a simple hydraulic system to balance the other 2. It was mentioned that one would need some kind of safety system. Jost reminded us that it is important to balance the weight because of the weight restrictions of the hall floor. Evgeny pointed out that this proposal for a stiff platform may be difficult to manufacture, as the beams would bend when being welded together. Andrea stressed that he only showed a conceptual idea.

Edward presented a new design of the TS platform making use of precision linear motion guides. He pointed out that they have very low friction and they have tested them in the lab where they fulfilled the expectations. Lars remarked that the maximum total length for the platform is 8 m. Edward promised to change his design accordingly. In addition he agreed to use 650 mm I-beams to gain space for rails and wheels. Edward suggested that the rails could be placed on the floor with high precision such that additional positioning means would become obsolete, which was debated controversially. Evgeny remarked that the momenta of inertia of the standard beams used in Edward's design would not be sufficient to provide rigidity of the platform. The evolving discussion on which momenta of inertia would be required was postponed until the discussion of the interfaces.

Lars showed the floor evenness requests (9 mm over 4 m or 15 mm over 15 m) and PANDA positioning requirements (1 mm / 1 mrad). Jost stated that we cannot rely on the floor evenness and need to make sure we can deal with possible differences. We also need to remember that the floor may still move after first installation.

A discussion around the interface definition took place. It is clear that the current Interface Document (in SVN) needs to be updated. A proposal produced by Evgeny was discussed. Regarding this document Jost commented that he is worried about the moments of inertia stated as they seem much too large. Evgeny said that this value comes from calculations of extreme

scenarios, where one or even 2 of the 3 supports for the beams are assumed missing. Jost remarked that in case of a system which equalises forces, like the one presented by Andrea, this would not be needed. There was some arguing of how much safety factors we can allow for in general. It was agreed to re-phrase the part of the document to reflect the fact that this criterium may be over-cautious. Jost said he would try to prepare a concept of a comparatively flexible platform which would behave as a stiff one because of a system of hydraulic supports.

Renzo showed considerations on the support of the cryostat he performed. He used very pessimistic assumptions of a large iron deformation which is transferred by rigid support fingers to the cryostat (design as laid out in the TDR). Even with this unrealistic assumptions of bending and the current suspension the cryostat would not break. It results in a ± 5 mm movement inside the cryostat. He also pointed out that the stability of the yoke could be increased using corner keys, like BaBar. Renzo emphasised that, though he had shown that the design should be mechanically fit to support the cryostat, he does not believe that this is the best design; and he would think it should be improved. However, INFN has no resources to design a better solution. We had a discussion on whether such resources could be found elsewhere. Jost volunteered to help, but he also pointed out that he has very limited time to work on this and needs assistance. It was suggested to consider if the re-design could be done by GSI with assistance of JINR.

Jost showed FEM calculations on an alternative cryostat support where he considered 3 rigid supports while the others remain spring loaded. It seems possible to place those supports in the middle of each plate. The results show that such a system would be a feasible alternative. He also reminded us on a discrepancy within the current interface document.

Inti showed some pictures and a brief comment he had received from Wes Craddock on the design of the BaBar magnet. We discussed on how to interpret the information. We had a discussion on an alternative design for our solenoid. In conclusion, there seem to be many obstacles changing the yoke design and no real need to do so. So, it was decided to keep our current design.