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29th January 1998

Minutes of PS Technical Meeting N° 98
held on 28th January 1998

The RFQ Decelerator

Present: *B.W. Allardyce, J. Boillot, J. Bosser, P. Bryant, M. Bouthéon, R. Cappi, B. Frammery, R. Garoby, R. Giannini, M. Giovannozzi, J. Gruber, H. Haseroth, Y. Hémery, H. Koziol, A. Lombardi, S. Maury, D. Moehl, W. Pirkl, U. Raich, J.P. Riunaud, D.J. Simon, E. Tanke, M. Vretenar.*

Absent: *B. Autin, V. Chohan, J.P. Delahaye, K. Hübner (DG), J.P. Potier, K. Schindl*

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1. W. Pirkl presented the draft of the proposal for an RFQ decelerator for the ASACUSA experiment. The document PS/HP Note 97-36 (draft) was circulated before the meeting. The requirements of phases I, II and III of the experiment were outlined and the implications for the RFQ explained, especially the vacuum problem.

   The novel features of the proposed design were explained, such as the internal structure allowing the inside to be at a variable high voltage to provide final energy variability; this was because the physicists did not want their experimental apparatus to be at high potential in a Faraday cage. Another feature is the abandonment of the entrance region or bunching section; this is put as a discrete element outside the RFQ in order to keep the RFQ to a reasonable length of 3.4m (it would be ~ 10m with a bunching section).

   Detailed studies of the beam optics were presented, and of the overall transmission which can be achieved (between 30% and 50%). The critical issue of beam blow-up during deceleration has been solved by a clever modulation shape of the rod electrodes as a function of longitudinal position, resulting in a practically constant beam envelope along the RFQ.

2. Various technical questions were raised, concerning the need for a very good vacuum; the energy spread of the beam at the end, especially for the phase II gas target; the comparison with a degraded beam (where a rough answer was suggested, that the RFQ will be a factor 10 to 100 better than a degrader); the question of whether or not magnetic shielding will be needed; and the need for ample and high-performance beam diagnostics.

3. There was then a discussion of resources. Various clarifications were made around the table especially concerning the manpower needed for the project. This section of the draft report will be rewritten in order to reflect the opinions of the meeting. Overall the cost is close to 1.5 MCHF and will need about 6 man-years of effort from the PS Division and some 3 man-years of external help, including some help for operation. The final version of the report will be available for the ADUC meeting on 20/02/98.

B.W. Allardyce