

SPLITTER MAGNET FOR LEAR EXPERIMENTAL AREA

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The present LEAR layout allows to run 3 experiments simultaneously if the momentum of particles to be shared is $\lesssim 950$ MeV/c. The ejected beam is split into three branches (M, C, S) and antiprotons in each branch can be switched by dipoles alternately to one of the subsequent beam lines (Fig. 1).

The S-branch is limited to momenta ≤ 950 MeV/c. For higher momenta the beam can be shared only between two branches C and M (area m_1). Therefore experiments which require higher momenta are installed in the branches C and M (areas c_1 , c_2 and m_1).

It could be desirable and more economic to share also antiprotons at higher momenta simultaneously between 3 experiments. This is feasible by replacing the dipole in the C-branch by a splitter magnet* (Fig. 1) with implied beam modification.

This layout modification was studied and the implications are listed below:

- 1) Construction of a new splitter magnet
- 2) Modification of the C-branch and new construction of the beam line c_2
- 3) Two additional wire chambers.

* This solution emerged in several discussions with the users. An explicit request is made in the memo to the PSCC (84-23) by F. Bradamante. Support is given by all high momentum users.

It has to be remarked that no new beam transport elements are required (except the splitter magnet), but some new vacuum chambers have to be made as well as 2 beam monitors (up- and downstream of the splitter magnet).

It has to be noted that no spare splitter magnet exists and that this element is vital for LEAR exploitation. The proposed splitter magnet could also be used as a replacement of one of the two existing magnets, since the parameters of this magnet will be identical to the two splitter magnets used for low energy operation. It should be noted that not more than 2 splitters can be used simultaneously during operation.

The time estimate for the construction of the new splitter magnet is 10-12 months. The shutdown in January/February 1985 would give sufficient time to make the modification without affecting LEAR operation. This would imply a rather quick approval of this proposal.

A cost estimate is attached.

A further implication has to be mentioned. The present beam line c_2 provides an intermediate focal point for 'momentum degrading' followed by a subsequent momentum analysis. The same beam line allows also to vary the production angle on the experimental target. These facilities are used for a part of the programme of experiment PS172, which will terminate in 1984 (see attached memo PSCC 84-23). However, the above-mentioned facilities in c_2 line cannot be kept in the new layout.

Encl.

A N N E X

Cost of splitter magnet and beam modifications:

1 Splitter magnet + vac. chamber	90 kSFr
New vac. chambers for beam line	20 "
1 pumping station (TVP)	20 "
MWPC including remote controlled movement, electronics, etc.	40 "
Beam stopper	<u>10 "</u>
	180 kSFr
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