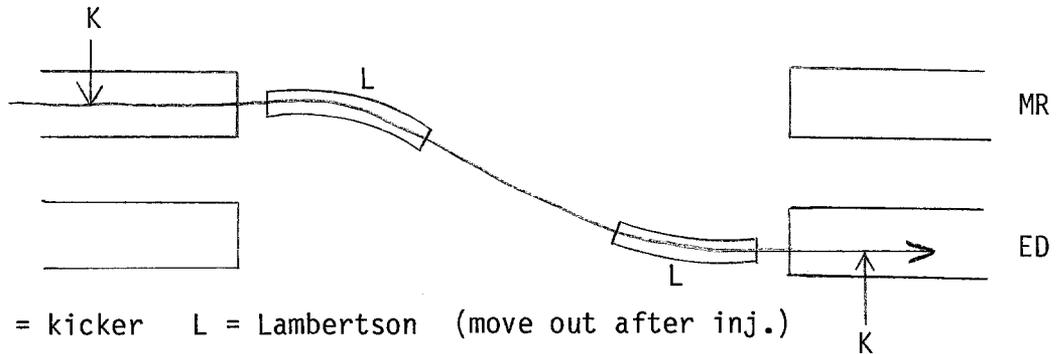


LAYOUT OF MR AND ED FUNCTIONS IN LONG STRAIGHT SECTIONS

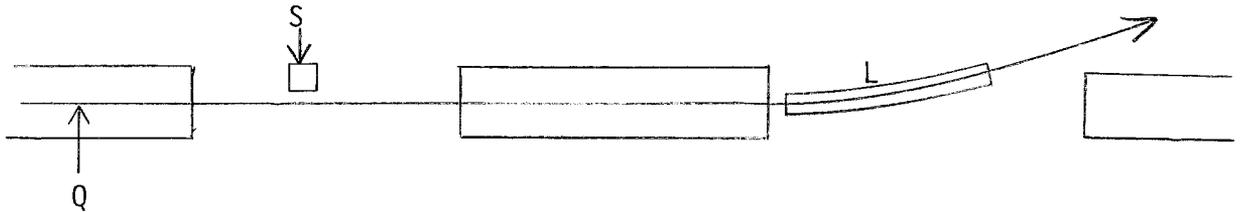
1. Functions and schemes for ED

a) Injection



(only devices in LSS are shown explicitly).

b) Extraction



Q = extraction quad S = electrostatic wire septum L = Lambertson

c) Abort



d) RF

Needs only 12 m length.

2. Status of functions

a) Immovable

MR Injection/Extraction	}	LA
ED Extraction		
MR RF		LF

b) Those requiring a lot of space

ED Injection	}	both forward and backward
ED Abort		

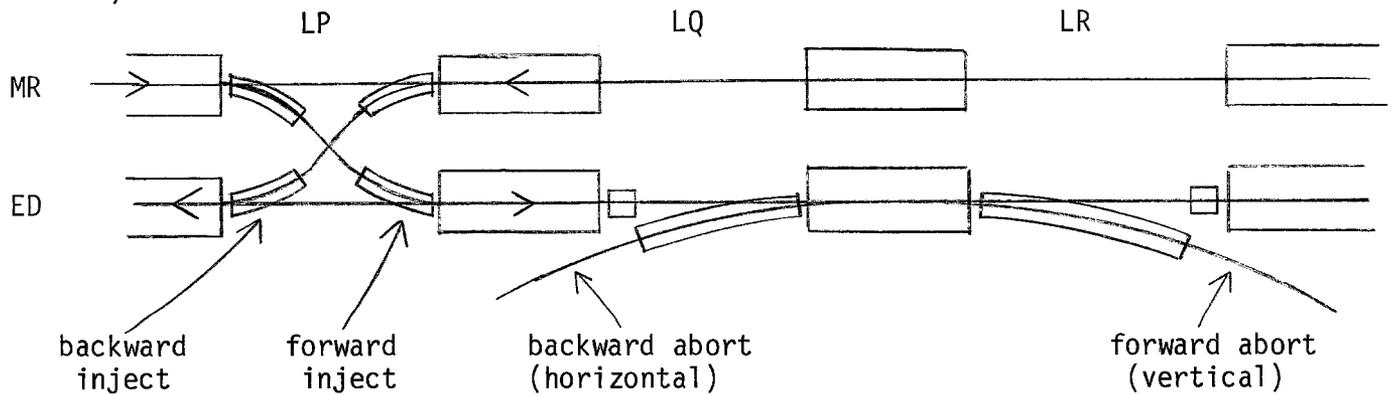
c) Those requiring little space

MR Abort	}	(These can be fitted in almost anywhere)
ED RF		

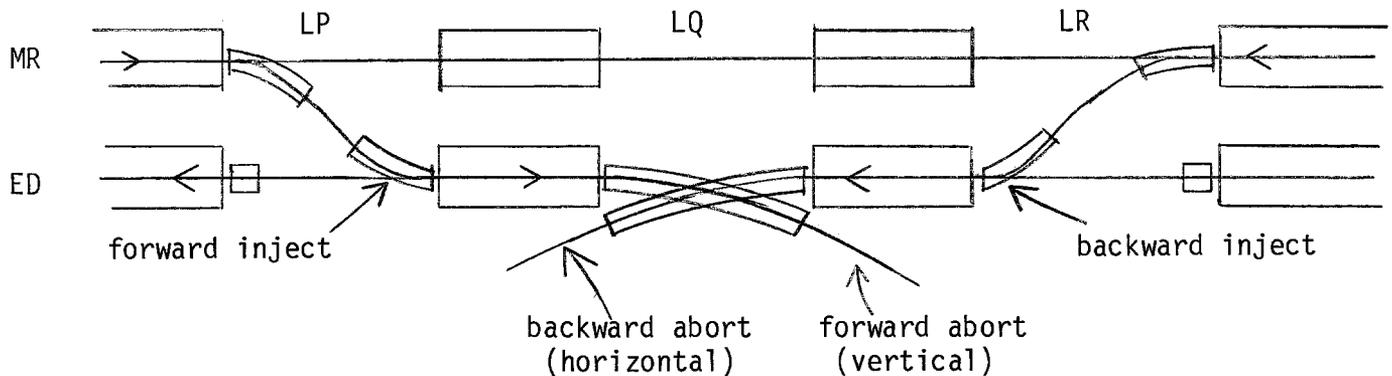
3. Layout of 2-b - ED forward and backward injection and abort

a) Impossible to fit into 2 long straights.

b) 3 - LS Scheme I



c) 3 - LS Scheme II



Now we critique these schemes:

- (i) Locations of functions in 2-c are

Scheme I

MR Abort	Q or R
ED RF	P

Scheme II

MR Abort	Q
ED RF	P or R (or in LF)

- (ii) Scheme II is preferred because

- a) All aborts, hence radioactivity, are confined in LQ.
- b) Less interference between abort kickers and injection Lambertson than between abort kickers and abort Lambertson as in Scheme I.

4. Choice of locations for LP LQ LR

a) $(P,Q,R) = (B,C,D)$

b) $(P,Q,R) = (C,D,E)$.

b) is preferred because this leaves LB for colliding beams and LB is closer to the control room than LE. Moreover if one adopts Scheme II b) will place all aborts in LD which is already radioactive from the present MR abort.

One might try to overlap one of LP, LQ, LR with either LA or LF

(i) LA is out - absolutely no space. (Maybe LP.)

(ii) In Scheme I, LF cannot overlap LP.

Physically LR can overlap LF, except it will make LF radioactive (which may be okay). In this case $(P,Q,R)=(D,E,F)$.

(iii) In Scheme II, also LR may overlap LF if MR-RF is reduced to ~ 12 cavities. So in either case $(P,Q,R)=(D,E,F)$ and we have LB and LC for colliding beams, expect it will be very crowded in LF. Depending on the degree of desirability of having 2 long straights for colliding beams it may be worth the trouble to crowd thing in LF.

5. Conclusion

Overall the most reasonable layout is $(P,Q,R)=(C,D,E)$ and Scheme II. This is shown in the following diagram:

