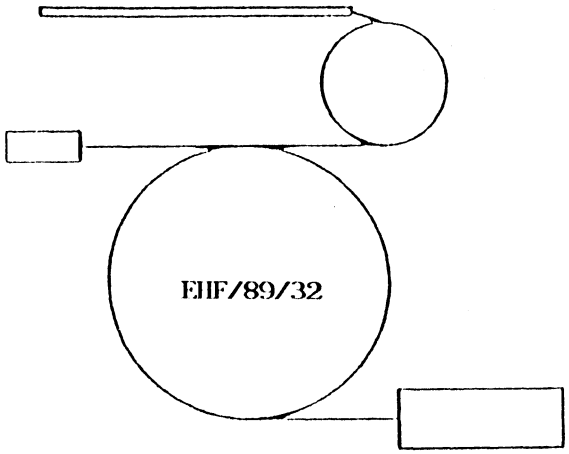


THE SC LINAC

M. Vretenar

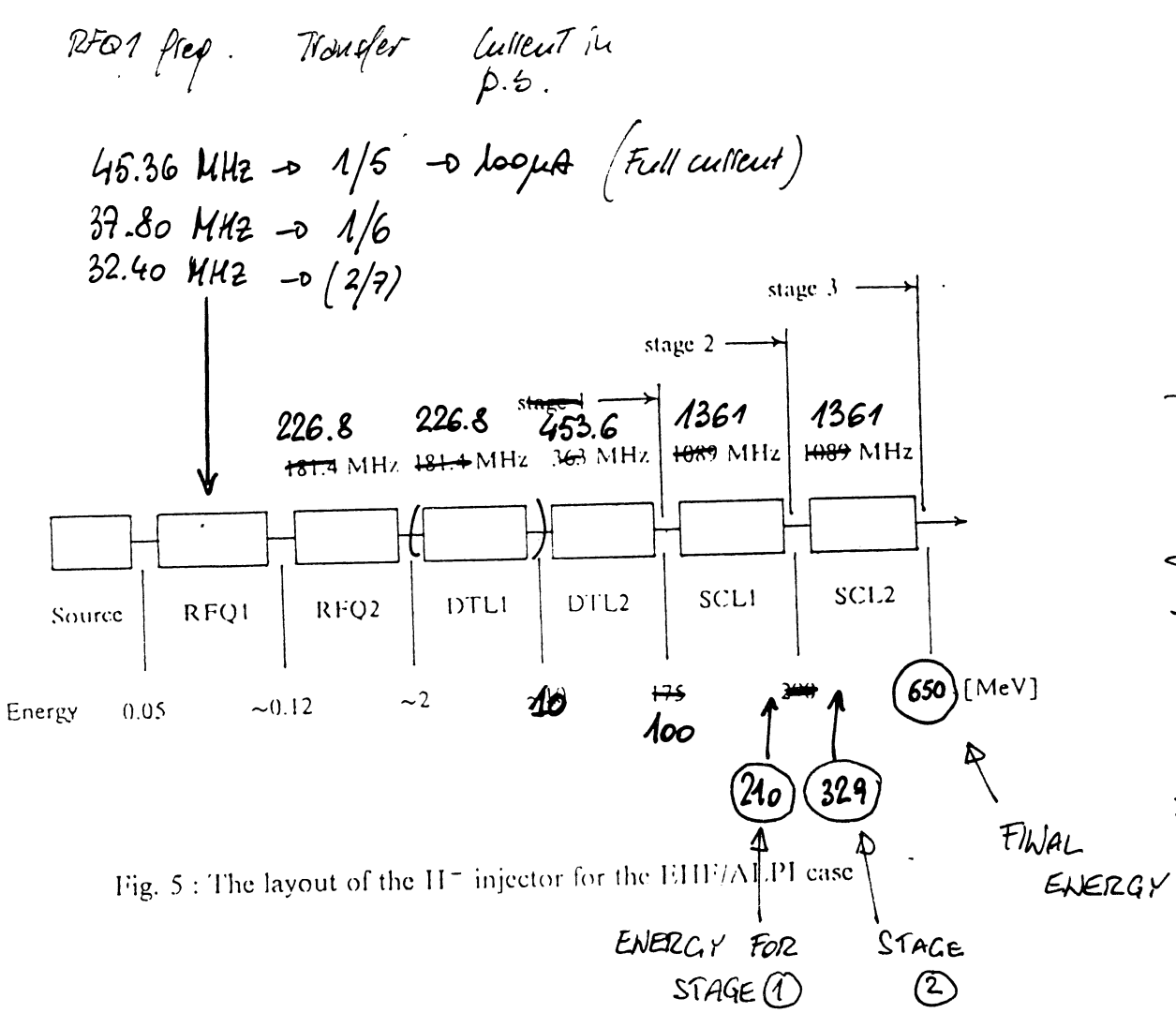


Fig. 5 : The layout of the H^- injector for the EHF/ALPI case

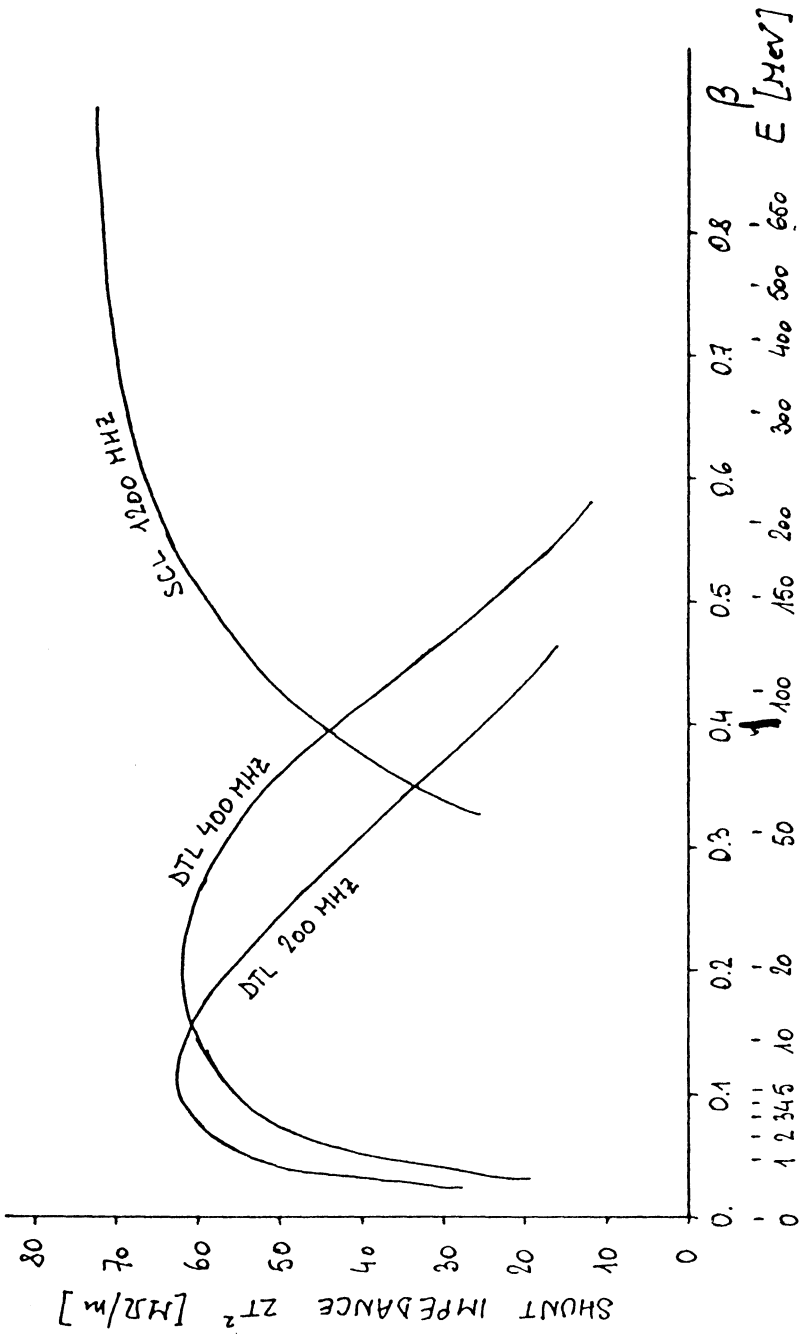
This new design of the EHF injector retains the basic idea of beam structure formation by means of two RFQs, and in addition offers the feature of an upgrading approach up to the full linac energy, but has still to be analized in detail.

WIDEWAR

Another possible layout for the EHF linac (after the Legnaro workshop) aiming to get as SCL frequency closer to the 1.3 GHz of existing power supplies

"FAIR" COMPARISON OF LINAC SHUNT IMPEDANCES

Ideal effective shunt impedance (linac def.), from Superfish and corrected for stems and coupling slots, relative to typical cells structure (bores and drift tubes) suitable for the EMMA case



1361 MHz SCL 100 ÷ 650 MEV (output of CCLDSN program)

```
 ENTER NSEC,FREQ,WINIT,QF,XMUO,XI,XIMAX,ET,EL
 DAW LINAC DESIGN, FREQ= 1361.0 MHZ, WIN= 100.0 MEV
 QFACTOR=0.80, CURRENT= 0.012 AMPS ET=    0.44000E-03  EL=    0.18000E+02
 ENTER PMAX,WF,PHIS,DR,QL,S,XMUF,NTPK,NC

, CONSTANT PARAMETERS FOR SECTION  1
 POWER= 7.0 MW, PHIS=-25.DEG, DR= 25., QL= 10., S= 20. CM  4TANK PER KLY

  NT  NC  LENGTH  TOTL L  ENERGY   EOT  ZTSQ  PHID    PS    PB    PRF    HP
CURRENT VALUE = 0.000AMPS
 POWER GIVEN BY THE KLYSTRON N =          1       6.99407864
   1  38  183.12   207.7  110.50 6.246  44.0 -45.7 1.622 0.131 1.753 2.950
   2  38  190.76   424.1  121.36 6.203  44.9 -44.3 1.634 0.136 1.770 2.978
   3  38  198.11   648.7  132.56 6.165  45.7 -43.0 1.647 0.140 1.787 3.005
   4  38  205.19   881.4  144.10 6.133  46.5 -41.8 1.660 0.144 1.804 3.030
 POWER GIVEN BY THE KLYSTRON N =          2       7.00631523
   5  38  211.92  1121.6  155.62 5.937  47.2 -40.4 1.582 0.144 1.726 3.037
   6  38  218.31  1369.0  167.44 5.915  47.9 -39.4 1.595 0.148 1.743 3.063
   7  38  224.47  1623.4  179.55 5.895  48.5 -38.6 1.608 0.151 1.760 3.088
   8  38  230.42  1884.6  191.93 5.878  49.1 -37.8 1.622 0.155 1.777 3.114
 POWER GIVEN BY THE KLYSTRON N =          3       7.00879002
   9  38  236.11  2152.1  204.41 5.778  49.6 -36.9 1.588 0.156 1.744 3.131
  10  38  241.57  2425.8  217 13 5.766  50.2 -36.2 1.601 0.159 1.760 3.157
  11  38  246.83  2705.5  230.11 5.755  50.6 -35.6 1.615 0.162 1.777 3.185
  12  38  251.91  2990.8  243.34 5.747  51.1 -35.0 1.628 0.165 1.794 3.213
 POWER GIVEN BY THE KLYSTRON N =          4       6.99391842
  13  38  256.81  3281.8  256.77 5.729  51.5 -34.5 1.637 0.168 1.804 3.241
  14  38  261.53  3578.0  270.44 5.723  51.9 -33.9 1.650 0.171 1.821 3.270
  15  38  266.09  3879.4  284.32 5.718  52.3 -33.5 1.664 0.174 1.837 3.300
  16  38  270.49  4185.8  298.42 5.713  52.6 -33.0 1.677 0.176 1.853 3.330
 POWER GIVEN BY THE KLYSTRON N =          5       6.99178791
  17  38  274.71  4496.9  312.53 5.630  53.0 -32.5 1.644 0.176 1.820 3.354
  18  38  278.76  4812.6  326.84 5.626  53.3 -32.1 1.656 0.179 1.835 3.385
  19  38  282.67  5132.7  341.33 5.623  53.6 -31.8 1.669 0.181 1.850 3.418
  20  38  286.44  5457.1  356.01 5.621  53.8 -31.5 1.681 0.184 1.865 3.450
 POWER GIVEN BY THE KLYSTRON N =          6       7.00927925
  21  38  290.04  5785.5  370.50 5.479  54.1 -31.0 1.610 0.181 1.791 3.470
  22  38  293.47  6117.8  385.15 5.477  54.3 -30.7 1.621 0.183 1.804 3.503
  23  38  296.80  6453.9  399.96 5.475  54.5 -30.5 1.632 0.185 1.817 3.537
  24  38  300.01  6793.5  414.92 5.474  54.7 -30.2 1.642 0.187 1.829 3.571
 POWER GIVEN BY THE KLYSTRON N =          7       7.00947762
  25  38  303.09  7136.7  429.87 5.412  54.9 -29.9 1.616 0.187 1.803 3.601
  26  38  306.06  7483.2  444.96 5.411  55.1 -29.7 1.626 0.189 1.815 3.636
  27  38  308.93  7833.0  460.18 5.410  55.3 -29.5 1.636 0.190 1.826 3.671
  28  38  311.71  8185.9  475.54 5.410  55.4 -29.3 1.646 0.192 1.838 3.707
 POWER GIVEN BY THE KLYSTRON N =          8       6.99516296
  29  38  314.40  8541.8  491.07 5.425  55.6 -29.1 1.665 0.194 1.859 3.745
  30  38  317.01  8900.7  506.73 5.425  55.7 -29.0 1.674 0.196 1.870 3.782
  31  38  319.54  9262.5  522.51 5.424  55.9 -28.8 1.683 0.197 1.880 3.818
  32  38  321.98  9627.0  538.41 5.423  56.0 -28.6 1.692 0.199 1.891 3.856
 POWER GIVEN BY THE KLYSTRON N =          9       7.00276375
  33  38  324.32  9994.1  554.06 5.303  56.1 -28.4 1.626 0.196 1.822 3.885
  34  38  326.56 10363.8  569.82 5.303  56.2 -28.3 1.634 0.197 1.831 3.923
  35  38  328.73 10735.9  585.69 5.302  56.3 -28.1 1.641 0.198 1.840 3.960
  36  38  330.83 11110.4  601.65 5.301  56.4 -28.0 1.649 0.200 1.848 3.999
 POWER GIVEN BY THE KLYSTRON N =         10       6.99249363
  37  38  332.87 11487.2  617.80 5.330  56.5 -27.9 1.675 0.202 1.876 4.039
  38  38  334.86 11866.2  634.04 5.330  56.6 -27.8 1.682 0.203 1.885 4.079
  39  38  336.78 12247.4  650.37 5.329  56.6 -27.7 1.689 0.204 1.893 4.118
 TOTAL POWER = 70.896 MWTOTAL TANKS LENGTH   10814.203

 DYNAMICAL PARAMETERS
  NT   MUL ALPHAL  BETAL   MUT  ALPHAX   BETAX  ALPHAY   BETAY
0AFB218I VSIOS : I/O ERROR, FILE FT02F001,     DMSSVT120S INPUT  ERROR 001 ON FT02F001,.
```

option (1) option (2)

	DTL	DTL	DTL	SCL	
FREQUENCY	226.8	453.6	453.6	1361	MHz
INPUT ENERGY	~2	10	~3	100	MeV
OUTPUT ENERGY	10	100	100	650	MeV
LENGTH	5	45	48	122.5	m
NUMBER OF TANKS	1	5	6	39	
NUMBER OF KLYSTRONS	-	5	6	10	
PEAK POWER	~0.5	~9	~10	71	MW