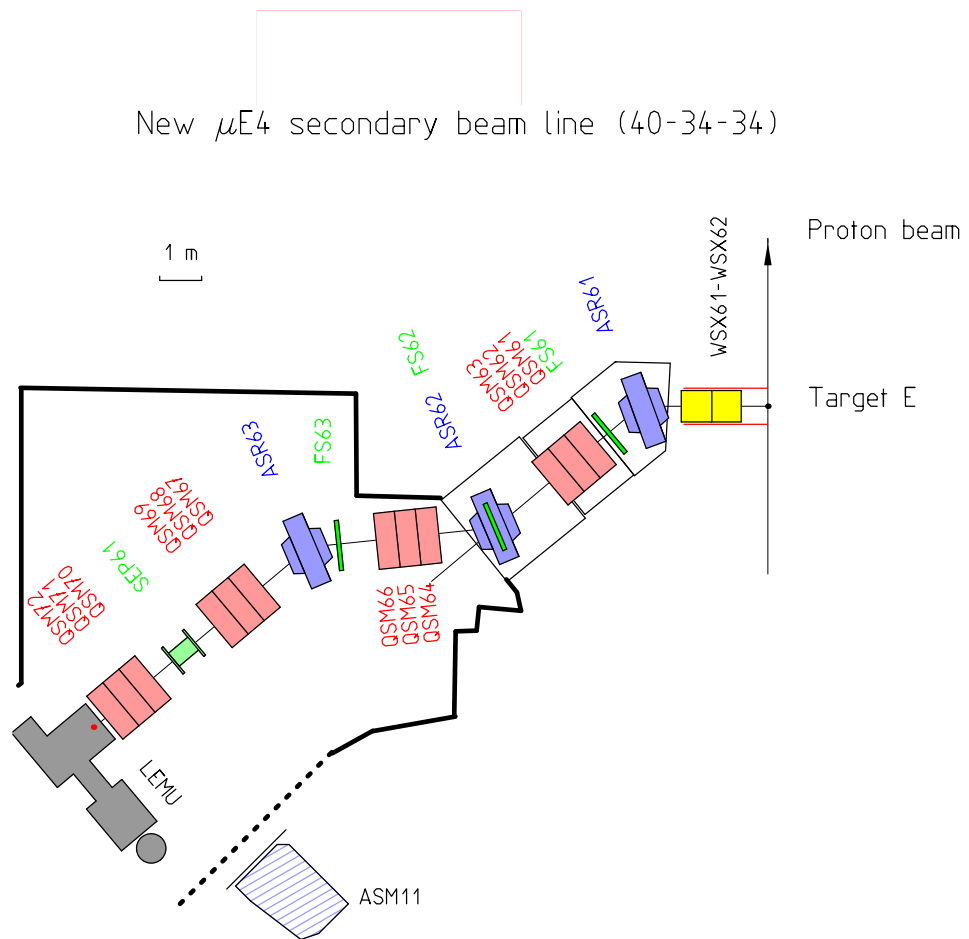


Some informations on the new μ E4 beam line

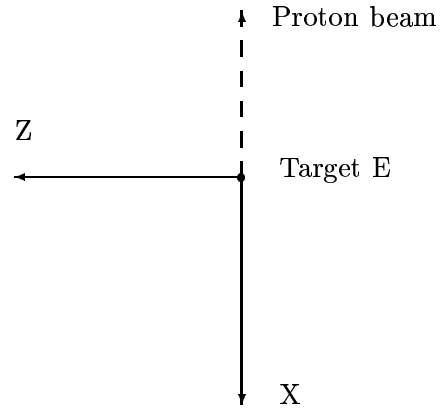
F Foroughi

PSI Feb 2001



Here is a list of the main elements and their position, for the new μE4 beam line. These positions may change slightly, in particular the position of the separator and the last triplets is still not known exactly. Slits FS61 and FS63 act in both X-Z and Y-Z plane, whereas FS62 acts only in the X-Z (bending) plane.

Element	X [cm]	Z [cm]
SOL61	0.	100.
ASK61	6.67	301.57
FS61	48.16	361.41
QSF61	80.28	399.71
QSF62	112.42	438.01
QSF63	144.56	476.32
ASK62	279.46	652.87
FS62	279.46	652.87
KV61	298.94	795.15
QSF64	312.83	873.93
QSF65	318.06	923.66
QSF66	323.29	973.38
FS63	331.97	1022.63
ASK63	245.83	1090.56
QSF67	417.64	1191.86
QSF68	449.77	1230.16
QSF69	481.94	1358.36
SEP61	559.07	1358.26
QSF70	636.21	1450.29
QSF71	668.38	1486.63
QSF72	700.55	1522.83



The data for power supplies, for 28 mev muon momentum, are given in the following table. Note that the given values are larger than needed, but correspond to existing and available power supplies.

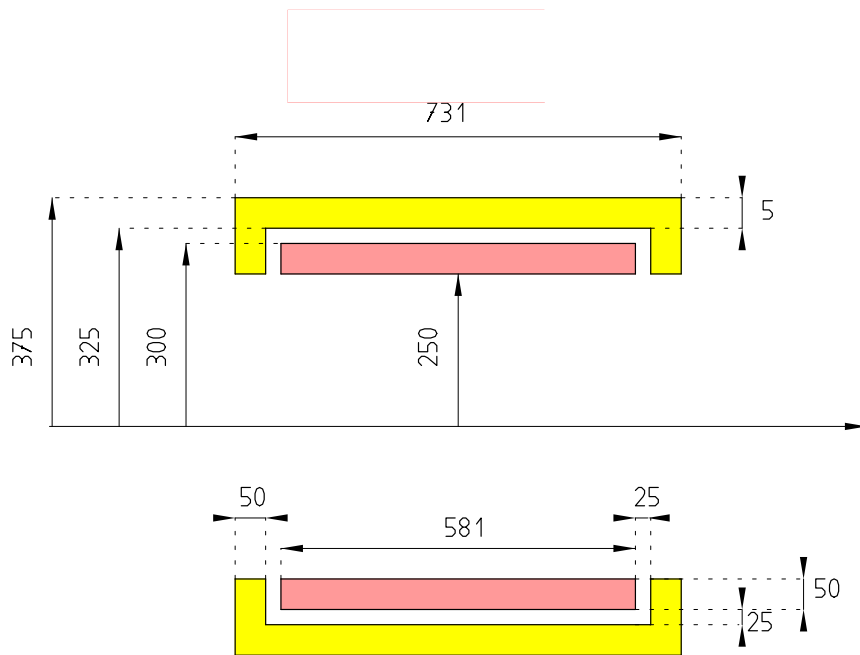
Element	I	V [V]	P [kW]	B [kG]	Gap [cm]
ASK	500 A	74	37	1-1.5	24
QSF	500 A	150	75	± 3	40
SOL	$5.8 \cdot 10^6 \text{ A/m}^2$		< 50	3-4	50
Separator		$350 \cdot 10^3$		0.3	18

Here are the needed or available power supplies :

Element(s)	Power supply	Remarks
ASK61 ASK62 ASK63	500A/250V 500A/250V 250A/100V	available, ASK61 available, ASK62 new
Solenoid	600A/200V	available, QTD61
8 QSF's 2 QSF's 1 QSF 1 QSF	500A/250V 250A/100V 600A/200V 250A/100V	available, QSK61-63 , QSB61-64, QTA61 available, QTD62-63 available, μ E4 Helmholtz new
Separator	350kV 250A/100V	2 available, old π M1 separator new
4 FS61's 2 FS62's 4 FS63's	?V ?V ?V	new ($\pm 20 \text{ cm}$) new ($\pm 20 \text{ cm}$) new ($\pm 20 \text{ cm}$)

There are 15 power supply available, and we need 17-18 ones, depending on the final number of solenoids

Here is a scheme of the foreseen solenoid :



coil $J = 5.8 \cdot 10^6 \text{A/m}^2$

iron $\mu = 2755$ (material number 2)

Solenoid for new $\mu\text{E}4$ beam line

We are trying to improve the beam quality by using two solenoids, of the same size and shape as the above one, only the shielding will be different !