

Machine options



	option 1	option 2	option 3	option 4	Option5
E_k [MeV]	840	975	1109	1240	975*
ΔE_k [MeV]	+/- 15	+/- 15	+/- 15	+/- 15	TBD
SRF cryo	11+12	11+15	11+18	11+21	11+12*
SRF cavity	33+48	33+60	33+72	33+84	33+48*
γ	1.895	2.039	2.182	2.322	2.039
β	0.849	0.872	0.889	0.903	0.872
Pulse length on target [ns]	724	699	681	677	699
P_{max} [MW]	1.2	1.8	2.2	2.4	1.7*
I_{peak} [mA]	36-52	48-52	52	52	45
Turns (inj.)	1027-714	1054-972	1074	1091	1054
ΔQ_{sc}	0.19	0.20	0.17	0.14	0.19

Accelerator Physics * Upgraded SRF cavity gradient; $E_p=35.0 +2.5/-7.5$ MV/m SNS

1 MW operation (estimates)



Options	840 MeV	975 MeV	1109 MeV	1240 MeV	1000MeV
N [10^{14}]	1.2	1.1	0.9	0.8	1.0
I _{ave} [mA]	1.2	1.0	0.9	0.8	1.0
I _{peak} [mA]	30 - 52	26 - 52	23 - 52	21 - 52	25 - 52
Duty cycl [%]	6.0 - 3.4	6.0 - 3.0	6.0 - 2.6	6.0 - 2.4	6.0 - 2.9
Turns (inj.)	1027 - 585	1054 - 523	1074 - 473	1091-432	1060-513
ΔQ_{sc}	0.16	0.11	0.09	0.08	0.10
$\Delta p/p [\%]$	0.40	0.36	0.34	0.40	0.35
ΔQ_{total}	0.17 - 0.23	0.12 - 0.17	0.09 - 0.14	0.09 - 0.15	0.11-0.16
Loss [kW]	1 - 8	1	1	1	1
HEBT cvt.?	Yes	Yes	Yes	Yes	Yes
Ring sext.?	Yes	maybe	No	No	maybe
Possible?	Yes	Yes	Yes	Yes	Yes

2 MW operation (estimates)



Options	840 MeV	975 MeV	1109 MeV	1240 MeV	1000MeV
N [10^{14}]	2.5	2.1	1.9	1.7	2.1
I _{ave} [mA]	2.4	2.1	1.8	1.6	2.0
I _{peak} [mA]	52	52	46 - 52	41 - 52	50 - 52
Duty cycl [%]	6.0	6.0	6.0 - 5.3	6.0 - 4.8	6.0 - 5.8
Turns (inj.)	1027	1054	1074-946	1091-865	1060-1025
ΔQ_{sc}	0.31	0.21	0.18	0.17	0.20
$\Delta p/p [\%]$	0.57	0.50	0.54	0.62	0.49
ΔQ_{total}	0.32 - 0.41	0.22 - 0.30	0.19 - 0.27	0.18 - 0.27	0.21-0.28
Loss [kW]	40 - 100	16 - 34	4 - 28	2 - 28	12 - 34
HEBT cvt.?	Yes	Yes	Yes	Yes	Yes
Ring sext.?	Yes	Yes	Yes	Yes	Yes
Possible?	No	Challenging	Yes	Yes	Challenging

Ring study loss model

