

## SNS End-to-End Simulation: Assumptions & Summary

	IS/LEBT	RFQ	MEBT	DTL	CCL	SCL (1)	SCL (2)	HEBT	Ring	RTBT	Target	Unit
<b>Energy, W (in DW)</b>		0.065	2.5	2.5	86.8	185.6	382.2	972.3	972.3	972.3	972.3	MeV
<b>e (n, rms)</b>	0.09/0.2	0.21	0.27				(+ / -) 0.26-0.43	(+ / -) 0.5	(+ / -) 65+65	(+ / -) 65+65	(+ / -) 972.3	mm mr
<b>e (un, 99%)</b>									120+120	120+120		mm mr
<b>DE (rms)</b>		0.009	0.017				0.33					MeV
<b>DE (com)</b>							2.2 (+/-)	0.2 (+/-)				MeV
<b>DE (full)</b>								4 (+/-)	10 (+/-)	10 (+/-)		MeV
<b>I (out, peak)</b>	65	52	52	52	52	52	52	52				mA
<b>Length</b>	0.12	3.72	3.66	36.81	57.47	64.229	172.45	169.49	248	150.75		m
<b>Codes used</b>	IGUN	PARMTEQ	PARMILA	PARMILA	PARMILA	PARMILA	PARMILA	PARMILA	UAL/ORBIT	PARMILA		
<b>N (macro)</b>	200	1e4/1e6	1e4/1e6	1e6/1e5	1e6/1e5	1e6/1e5	1e6/1e5		1e6/1e5			
<b>random seeds</b>	1	100	100	1/10	1/10	1/10	1/10		1/10			
<b>Loss (control)</b>									0.02 - 0.1			
<b>Loss (uncont.)</b>									0.0001			
<b>e (rms) growth</b>												%
<b>e (99%) growth</b>												%
<b>Included</b>	sp. ch. Initial electrns Ion temp	sp. ch.	sp. ch. Quad mag. Err	space charge rf phase/amp. error quad gradient error quad roll cavity-to-cavity tilt		space charge rf phase/amp. error quad gradient error Lorentz detuning quad roll cavity-to-cavity tilt			painting space charge magnet error aperture magnet offset			
<b>Excluded</b>	Dumping mag field misalign	Magn. errors		quad misalignment multipoles		quad misalignment multipoles missing cavities rematching			impedance electron cloud scattering beam loading collimation fringe field quad roll			
<b>Open issues</b>	no direct LEBT-RFQ handover will use msrd LEBT distrib.s								ext kicker imp			

**Note:**

- (a) obtained from 1000 envelope runs
- (b) machine length finalized July 2000
- (c) LEBT length only, for simulation
- (d) FES; different codes for different components!
- (e) LBNL: 1e4; LANL: up to 1e6

**Note**

(a)

(b,c)

(d,e)

