HIGH-ENERGY COLLIDER PARAMETERS: p, $\overline{p}p$, and ep Colliders

The numbers here were received from representatives of the colliders in 1993 or early 1994. Numbers are subject to change, and many are only estimates. Quantities are, where appropriate, r.m.s. H, V, and, s.c. indicate horizontal and vertical directions, and superconducting.

	S$p\overline{p}$S (CERN)	TEVATRON (Fermilab)	HERA (DESY)	UNK (Serpukhov)	LHC (CERN)		SSC (USA)
Physics start date	1981	1987	1990	?	2002		Terminated
Particles collided	$p\overline{p}$	$p\overline{p}$	ep	pp	pp	Pb Pb	pp
Maximum beam energy (TeV)	0.315 (0.45 in pulsed mode)	0.9–1.0	e: 0.030 p: 0.82	0.4 (3)	7.0	574	20
Luminosity (10^{30}cm^{-2}s^{-1})	6	7.5 (1993) 10 (1994)	16	1000	1.0×10^4	0.002	1000
Time between collisions (μs)	3.8	3.5	0.096	0.165	0.025	0.135	0.016678
Bunch length (cm)	20	50	e: 0.83 p: 8.5	70 (40)	7.5	7.5	6.0
Beam radius (10^{-6} m)	p: $73(H), 36(V)$ $\bar{p}$: $55(H), 27(V)$	36	e: $280(H), 37(V)$ p: $265(H), 84(V)$	70	16	15	4.8
Free space at interaction point (m)	16	±6.5	±5.5	±8	32	32	±20
β^*, amplitude function at interaction point (m)	0.6 (H) 0.15 (V)	0.5→0.25	e: $2(H), 0.7(V)$ p: $7(H), 0.7(V)$	0.2 (1.5)	0.5	0.5	0.5
Circumference (km)	6.911	6.28	6.336	20.772	26.659		87.12
Interaction regions	2	2 high $\mathscr{L}$	3	4	2 high $\mathscr{L}$	1	4