Proton Driver Study II: Preliminary Parameter List

(Revised, January 30, 2002)

8 GeV Proton Synchrotron

Circumference (m)	474.2
Injection kinetic energy (MeV)	600
Extraction kinetic energy (GeV)	8
Protons per cycle	2.5×10^{13}
Repetition rate (Hz)	15
Protons per second	3.75×10^{14}
Average beam current (μA)	60
Target beam power (MW)	0.48
RF frequency (MHz)	53
Number of bunches	84
Protons per bunch	3×10^{11}
Peak dipole field (T)	1.5
Good field region	4 in × 6 in
Dispersion in the straight sections	0
Transition γ_t	>> 9.5
Revolution time at injection, extraction (μs)	2.0, 1.6
Linac injection current (mA)	50
Injection time (μs)	90
Injection turns	45
Laslett tune shift at injection	0.25
Normalized transverse emittance (mm-mrad)	
Injection beam (95%)	3 π
Circulating beam (100%)	40 π
Longitudinal emittance (95%, eV-s)	
Injection beam	0.1
Circulating beam	0.2
Extraction bunch length σ_t (rms, ns)	1
Momentum acceptance	±1%
Dynamic aperture	> 80 π