

Formulas

Symbol	Meaning	Formula
s	longitudinal dimension	-
x	transverse horizontal dimension	-
y	transverse vertical dimension	-
E	Beam Energy	-
β_x	horizontal Beta-function	
β_y	vertical Beta-function	
D	Dispersion	
D'	spatial dispersion derivativ	$D'(s) = \frac{dD}{ds} = \int \frac{d^2}{\rho(s)} ds$
Q_x	horizontal Tune	$Q_x = \frac{1}{2\pi} \int \frac{1}{\beta_x(s)} ds$
Q_y	vertical Tune	$Q_y = \frac{1}{2\pi} \int \frac{1}{\beta_y(s)} ds$
α	Momentum compaction factor	-
α_0	Momentum compaction factor (1st order)	
α_1	Momentum compaction factor (2nd order)	
α_x	Twiss-Parameter	$-\frac{1}{2} \frac{d\beta_x}{ds}$
α_y	Twiss-Parameter	$-\frac{1}{2} \frac{d\beta_y}{ds}$
H_{xxxxxx}	Resonance driving term	J.Bengtsson, SLS Note
χ_x	horizontal Chromaticity (1st order)	
χ_y	vertical Chromaticity (1st order)	
χ_{Sx}	horizontal Chromaticity Sextupole contribution	
χ_{Sy}	vertical Chromaticity Sextupole contribution	
$\chi_x^{(2)}$	horizontal Chromaticity (2nd order)	
$\chi_y^{(2)}$	vertical Chromaticity (2nd order)	
$\chi_{Sx}^{(2)}$	horizontal Chromaticity Sextupole contribution (2nd order)	
$\chi_{Sy}^{(2)}$	vertical Chromaticity Sextupole contribution (2nd order)	
f_{rf}	Frequency of rf-Cavity	-
U_{rf}	Voltage of rf-Cavity	-