

Introduction to Particle Accelerator Physics

Exercise 3

Discussion: 23.11.2004

Hand in: 30.11.2004

Solutions: 7.12.2004

1. Dispersion Function

An often heard statement is "dispersion is generated in bends". Comment on this statement by examining the dispersion function $D(s)$ in straight sections, i.e. in the limit $\rho \rightarrow \infty$.

2. Momentum Compaction Factor

In the SLS storage ring the (linear) momentum compaction factor is $\alpha_c = 6.3 \cdot 10^{-4}$. The maximum momentum spread is 0.09%. Keeping in mind the revolution frequency $f = 1.04167$ MHz, calculate the maximum absolute change in path length.