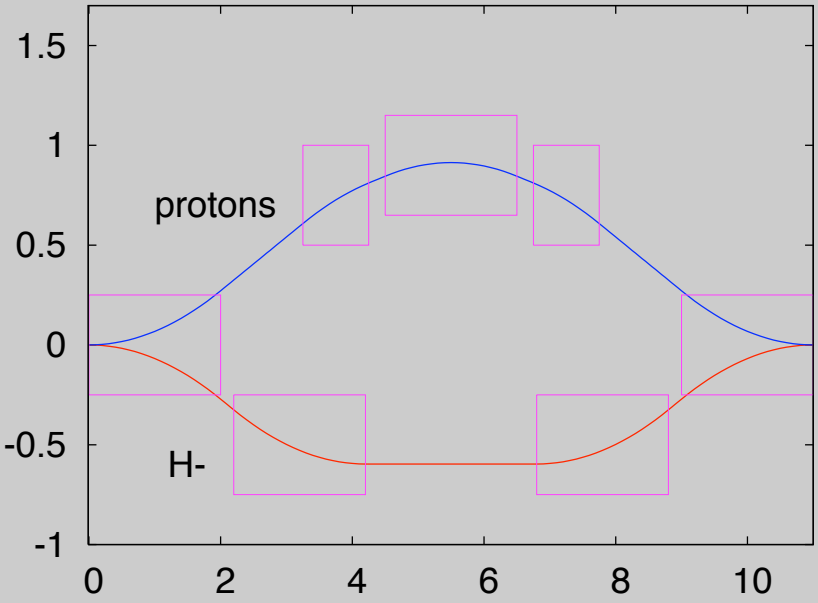
Chicane

The injection timing in the 325 MHz section may be chosen so that both particle species (*H-* and *p*) find the correct phase. Problem: if the 1.3 GHz system is correctly phased for one particle species, it is out of phase for the other one. Solutions:

- use 260 MHz (or 433) instead of 325
- introduce 83 mm path length difference by a *chicane* right before 1.3 GHz section (422 MeV)

Scheme (units: meters)

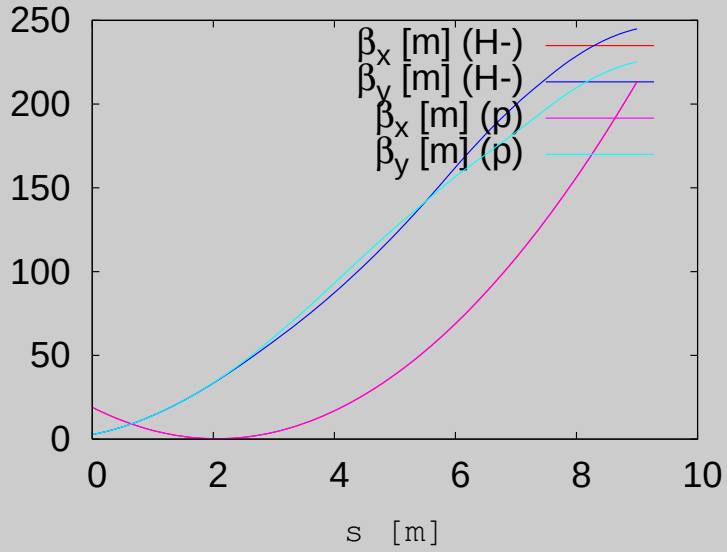


Rectangular bending magnets (non-dispersive insertion) Three bending magnets are used for one particle species to get *tunability* for empyrical adjustments. Field: 0.6 T [a]

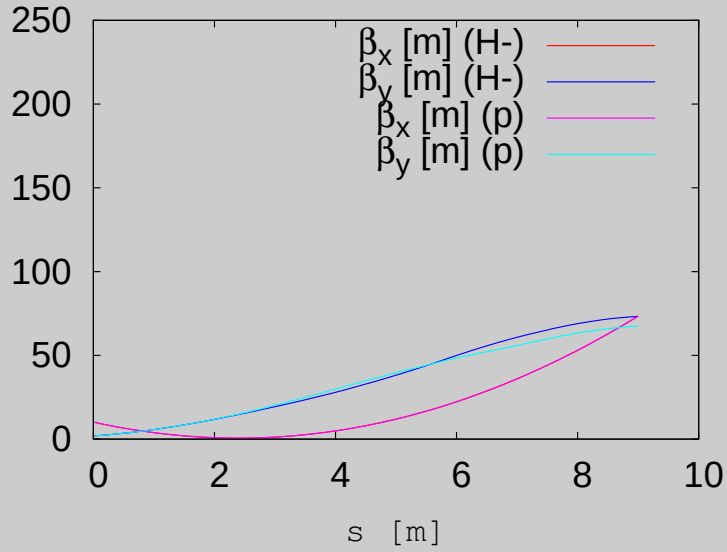
[a] larger field causes non negligible stripping

Transverse Optics[a]

Input values from TRACK for 0 mA



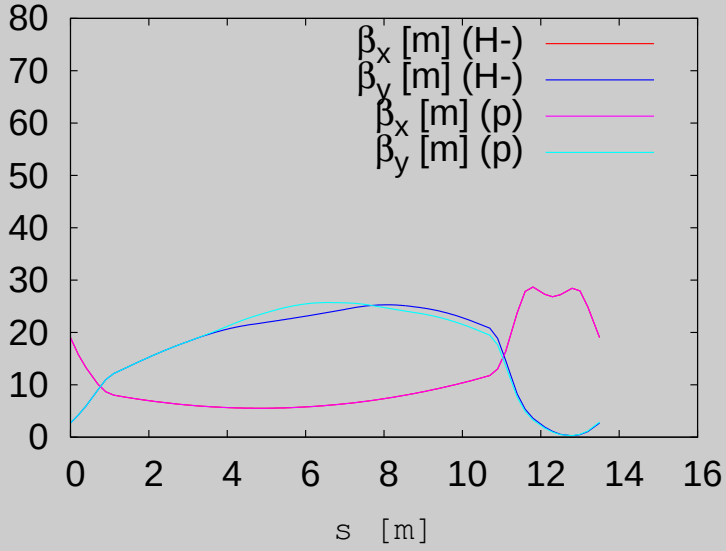
Input values from TRACK for 10 mA



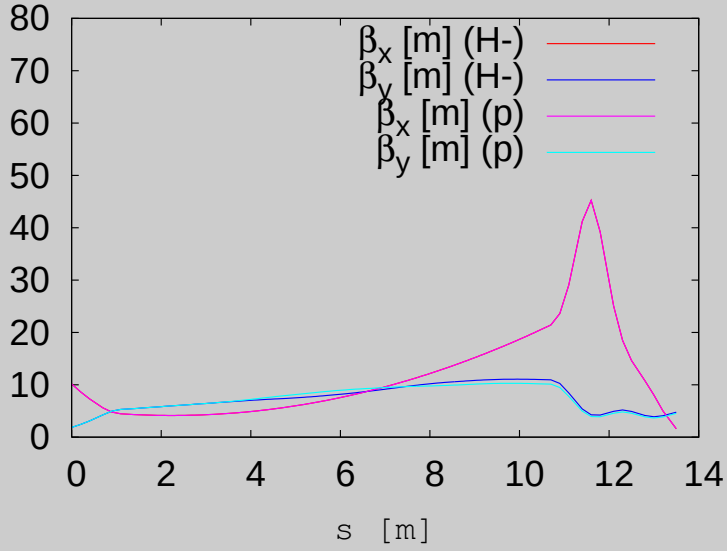
[a] the starting conditions will be different for H- and p ...

Add 2 quadrupoles upstream to control Twiss functions along the chicane and 4 quadrupole downstream to match to previous values (*transparent* insertion)

Input values from TRACK for 0 mA



Input values from TRACK for 10 mA

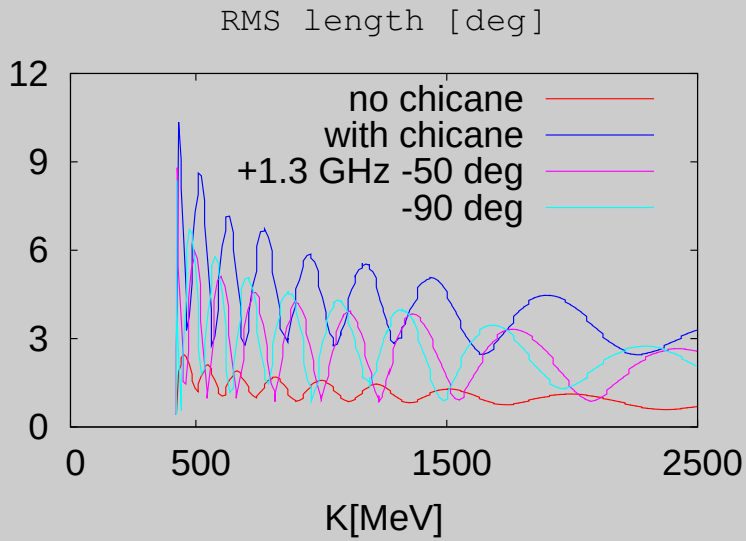


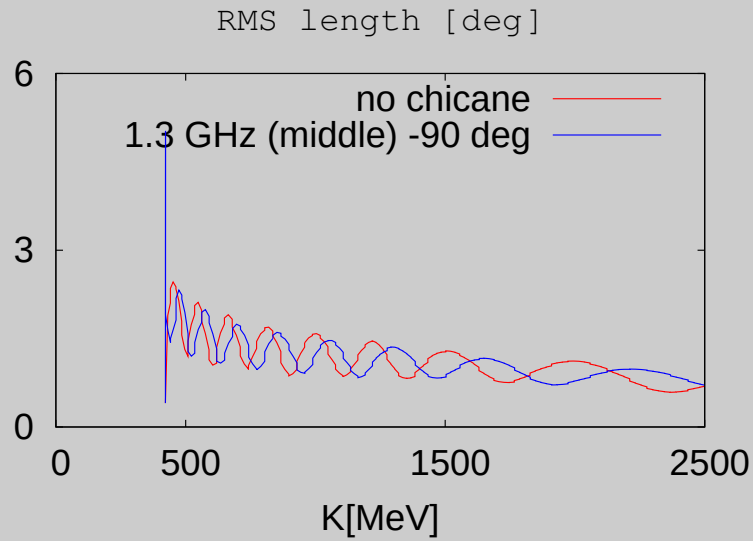
No perfect transparency may be obtained for 10 mA. Some extra tuning may be needed.

Longitudinal Optics

Attempts by using TRACK (0 mA):

- add a 325 MHz cavity just before first dipole: does not help very much
- add 1.3 GHz cavity just after last dipole: some improvement
- introduce a 1.3 GHz pair in the *H*- chicane middle: great improvement





Hopefully a single cavity in one of the p chicane (shorter) drifts will give the same good result.

Next step: use TRACE3D for trying matching chicane w/o resorting to extra quadrupoles