

LHC Upgrade: Non-ATS Solutions

Re-Design of the Matching Section for Optics Flexibility and for Plan “B”

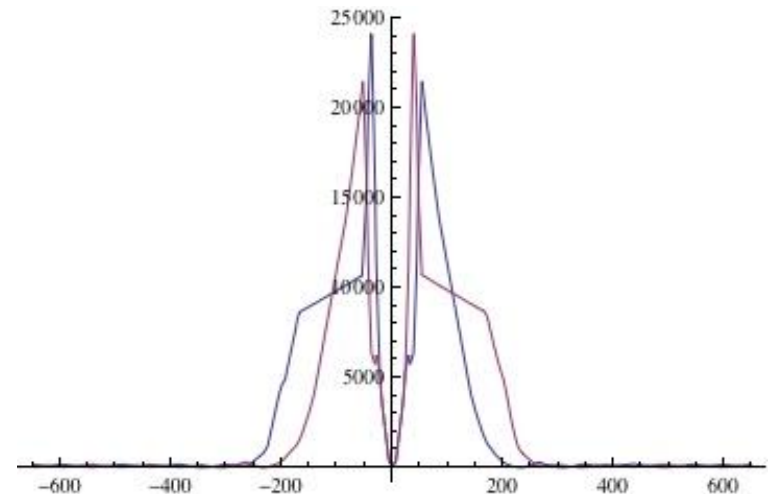
re-positioning of the matching quadrupoles, namely Q4...Q6

introducing an additional quadrupole lens between q3 and q7.

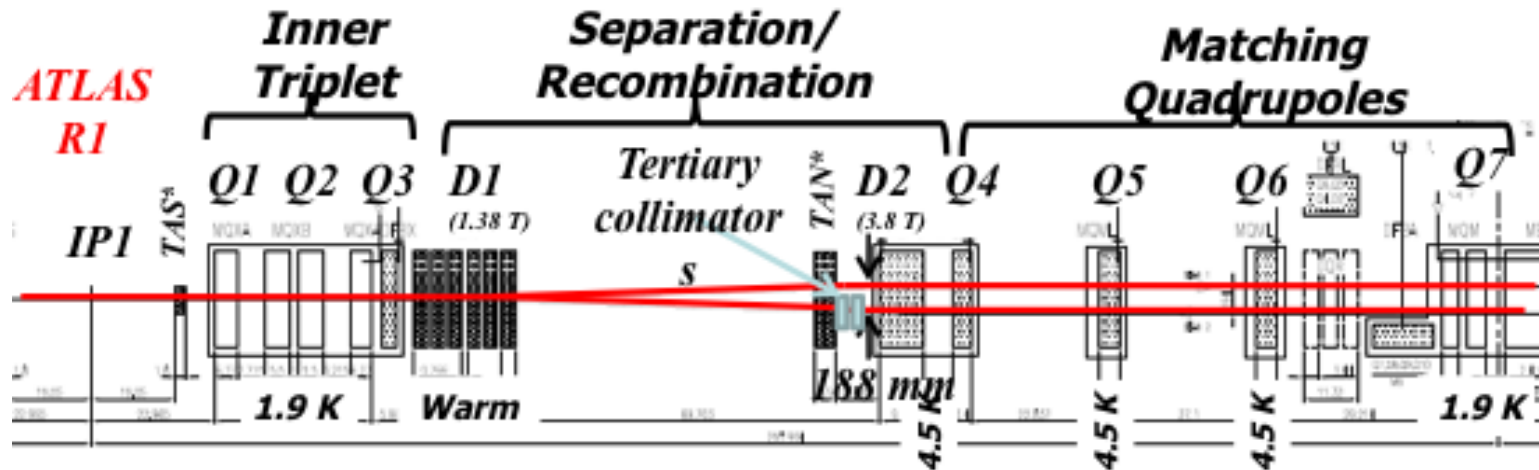
get the smallest β^* at the IP1 & 5, to establish an ambitious pre-squeeze optics or - even more to obtain β^* values that will allow us to get the required luminosity without ATS squeeze.

Re-Design of the Matching Section on Big Scale

Local Sextupole Correction Scheme



Re-Design Matching on Big Scale



What means BIG SCALE?

Not too much to choose different from:

- Q1, Q2, Q3 use the trims to give some independency
- Q4bis before D2 /Q4
- Q5, Q6 as doublets or triplet configuration
- Q7 stronger

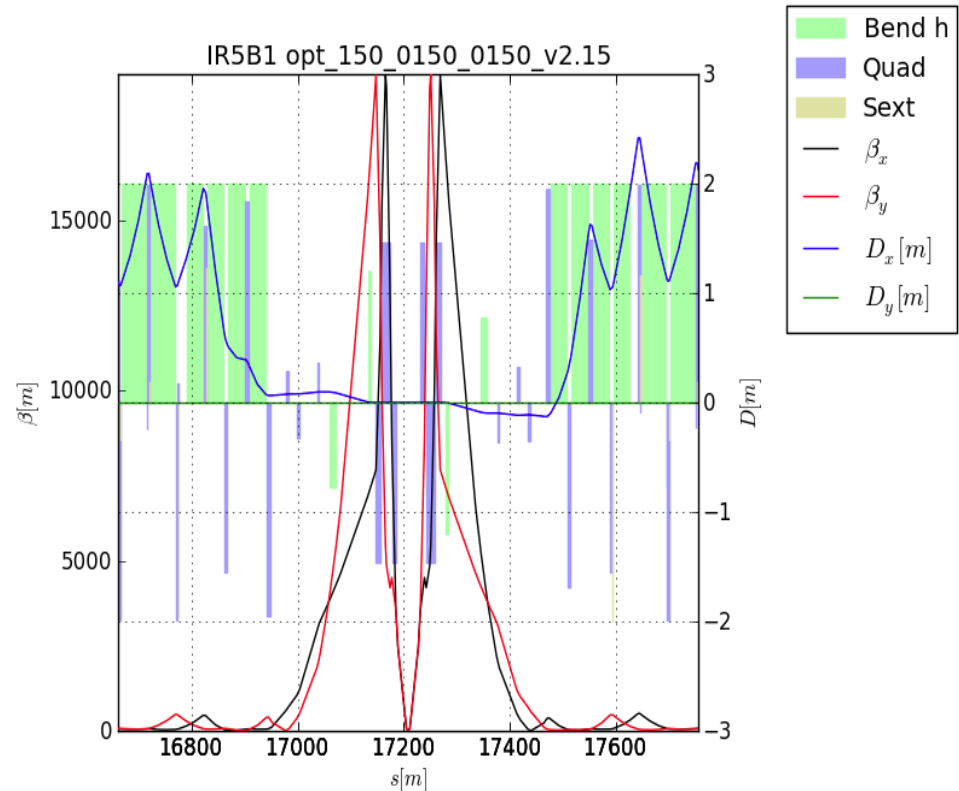
Re-Design Matching on Big Scale

Looking to the typical collision optics:

- Q1, Q2, Q3 (KTQ1 is the only efficient)
- Q4bis/Q4 are too close (only increasing the slope but avoiding 2nd low- β , are really necessary??)
- Q5, Q6 to allow the flip of sign
- Q7 stronger

Some constrains:

- keeping some kind of anti-symmetry
- matching section is short (~268 m), not very efficient to change the positions if we have Q5 and Q6 as doublets or a triplet configuration



Re-Design Matching on Big Scale

I have started to look to the possibilities.

Work is ongoing...taking as starting point the standard optics