



Difference in transfer function between Q2a and Q2b

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THE PROBLEM

- What is the difference in the transfer function between Q2a and Q2b ?
- Spread of the quadrupole transfer function:
 - Main quadrupole: 13 units (one sigma)
 - MQXA: 5 units (one sigma)
 - Guess for MQXF: 10 units (one sigma)
- There will be the possibility of having sorting
 - A Montecarlo gives a 1/3 probability of having a difference between Q2a and Q2b below 5 units
 - With sorting this increases to 2/3 - but 1/3 are still larger than 5 units, and 17% larger than 10 units
- To get down to less than 5 units one has to couple the sorting with other methods to control the TF

TF difference between Q2a and Q2b	Without sorting	with sorting
>10 units	50%	17%
between 5 and 10 units	17%	22%
> 5 units	33%	61%

THE PROBLEM

- Other methods to control the TF:
 - Lengths of iron laminations
 - One can change up to ± 10 units with a change of ± 100 mm of length of non magnetic pads
 - Problem
 - If the length has to be increased, peak field increases – but one could act always in the same direction (i.e. having two magnets with TF difference, reducing the larger TF)
 - The action has to be done before final assembly so it requires some additional manpower – to be analysed
 - In principle we see showstoppers not allowing to control the TF difference within 10 units

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