

Concluding remarks

1. FMA = diagnostic tool (data post processing)

→ identification of the limiting resonances



lifetime
beam losses
injection
...

→ graphical representation

→ Once you have it you must:

✓ go back to optimisation codes
(-> tune shifts with Amp, with $\Delta p/p$
sextupolar driving terms, ...)

or

✓ correct multipole errors

or

✓ add multipole correctors

or

✓ do nothing if you are happy !

but in any case you have to use modelling.

2. FMA relies on the quality of the data analysis

✓ Data from tracking code

✓ Data from Exp. measurements

* During design phase -> Tracking Code to optimise machine specification

Modelling should be accurate to design the best “on paper” machine

* Once Machine exists:

Refine the model to make it fitting the real machine. IS NOT OBVIOUS

3. Tracking codes

- Most of the time 4D
- Sometimes 6D
- Each facility at this workshop has its own Tracking Code !!

WHY ?

Not optimised use of the overall expert resources

The goal is to get the more precise way of representing non linearities.

6D important to introduce

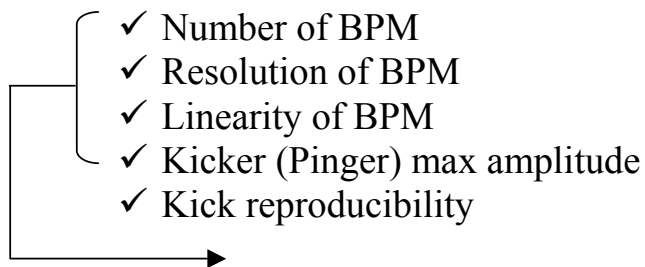
- ✓ Radiation Damping
- ✓ Synchrotron Oscillation

-> Change criticality of resonances

4. Real measurements

Quality of data depends on Exp. Set up

Key parameters:

- 
- ✓ Number of BPM
 - ✓ Resolution of BPM
 - ✓ Linearity of BPM
 - ✓ Kicker (Pinger) max amplitude
 - ✓ Kick reproducibility

Use tracking codes to weight the criticality of these parameters

Key issues:

- ✓ Measuring time
- ✓ Time required to set up and optimise measurement
- ✓ Decoherence (due to the integer part of the tune)
- Problem can be solved (use sym BPM)

Alternative method (AC dipole) to be investigated

5. Alternative methods

✓ Harmonic analysis

- └─▶ provides directly resonance driving terms
- ⇒ faster process from the measurement to the optimisation ?

✓ Response matrix:

- Other way of comparing model to real machine
- direct correction (coupling, ...) of linear terms

Finally

- ✓ Very interesting discussions
- ✓ High quality of the presentations (good selection of relevant topics)

Thanks to all participants !