Dynamic aperture update

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Acknowledgements:

16th HE-LHC design meeting, CERN, Jul. 06, 2017
Outline

➤ Dynamic aperture
  ● Short- and long-term DA
  ● DA with errors

➤ Outlook
1. Dynamic aperture

➤ Compare short- and long-term DA w/o errors
  ● Short-term (upper, tracking 1024 turns): colorful dots => survived over 1024 turns
  ● Long-term (lower, tracking $10^5$ turns): colors scale as survival turns

![Graphs showing different dynamic aperture scenarios]
1. Dynamic aperture

➤ Compare short-term DA w/o and w/ systematic errors

- Systematic errors: $b3s=+6$, $b5s=-1$ in dipoles
- $20\times 90$-deg version is more robust against errors?
2. Summary

➡ Outlook

- Need systematic simulations of DA with errors (Tools: SAD, LEGO, MADX/SixTrack)
- Need systematic evaluations of the optional arc schemes for HE-LHC, and select the outstanding one
- [Urgent] Need to prepare MADX toolkits (Full lattice with respects to engineering details, macros for lattice manipulations, simulation tools, etc.)