Update on the loss maps simulations of the ATS optics

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Update: differences with first presentation

- Dispersion is now corrected.

- The issue with the first impact distribution is solved:
  - They were many first impacts on other collimators than the considered primary;
  - Now less impacts, and sorted by collimator.

- All simulations are now without energy spread.
Dispersion

Dispersion not corrected

Dispersion corrected
Hor. halo, first impacts on considered primary

- With energy spread:
  - Dispersion not corrected: 97.31 % on TCP
  - Dispersion corrected: 99.47 % on TCP

- Without energy spread:
  - Dispersion not corrected: 99.07 % on TCP
  - Dispersion corrected: 99.30 % on TCP

- Out of the particles not lost on the considered primary, 92 % are lost on the next TCP (skew).
First impacts on primary: hor., with energy spread

- Dispersion not corrected
- Non realistic impact parameters
- First impacts on other coll.

- Dispersion corrected
- All impacts within $1.2 \sigma$
- Much less impacts on other collimators.
Crossing angles

- IP1 (V): 295 $\mu$rad
- IP2 (V): 240 $\mu$rad
- IP5 (H): 295 $\mu$rad
- IP8 (H): 305 $\mu$rad
Vertical halo, $6\sigma$, $dp/p = 0$

loss map for the whole ring

- Global loss map with standard simulation parameters worked at first attempt
  - MadX, Sixtrack, Collimation, trajectory
- New loss map is now more realistic
- Many losses outside collimators
- Leakage around other IPs

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Vertical halo, $6 \sigma$, $dp/p = 0$

loss maps for IR1 and IR5

- Cells 4L1 to 2L1
- Downstream of TCTVA.4L1.B1
- Cells 3L5 and 2L5
Conclusion

- All results seem realistic
  - Losses distributed around the ring
  - Realistic (smaller) impact parameter on primary
  - Less first impacts on other collimators
- Full multi-turn cleaning simulation chain well under control
- We can start trusting loss maps, and produce some more.