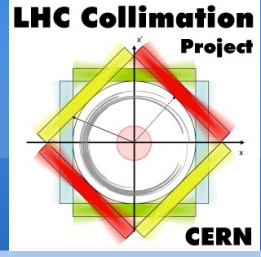

Update on the loss maps simulations of the ATS optics

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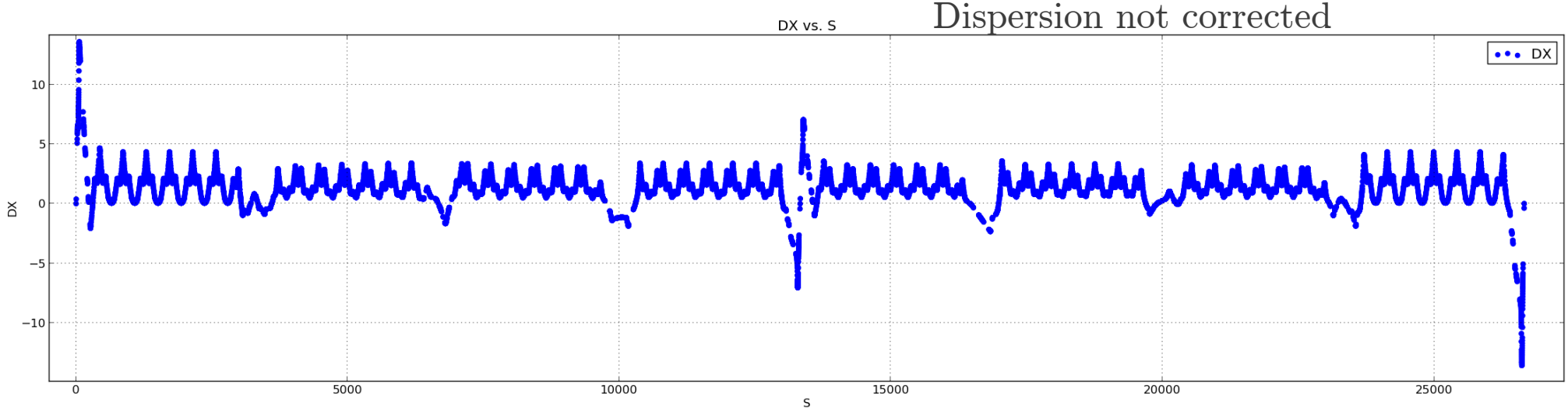
Update: differences with first presentation

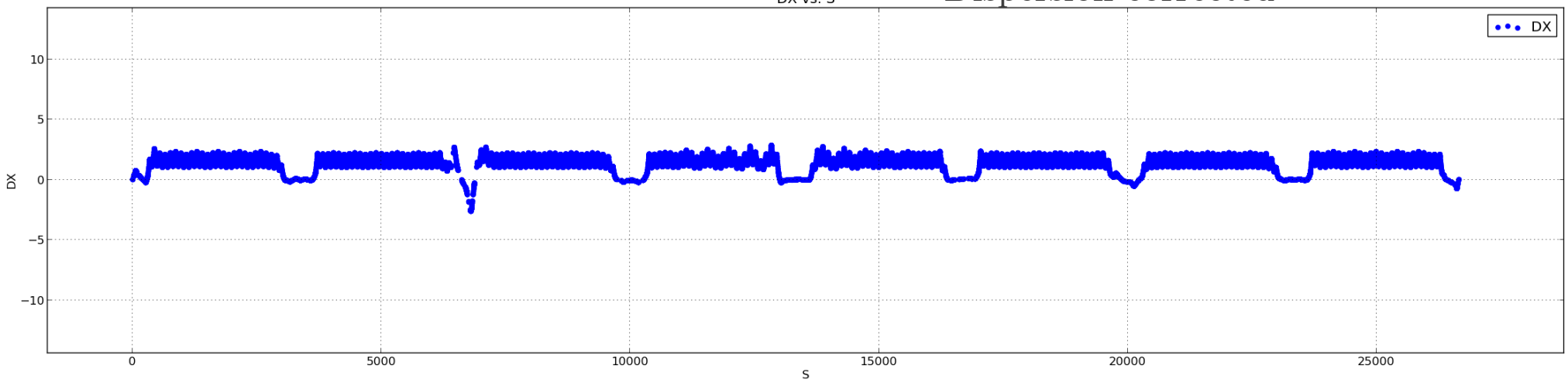
- Dispersion is now corrected.
- The issue with the first impact distribution is solved:
  - They were many first impacts on other collimators than the considered primary;
  - Now less impacts, and sorted by collimator.
- All simulations are now without energy spread.

Dispersion

Dispersion not corrected



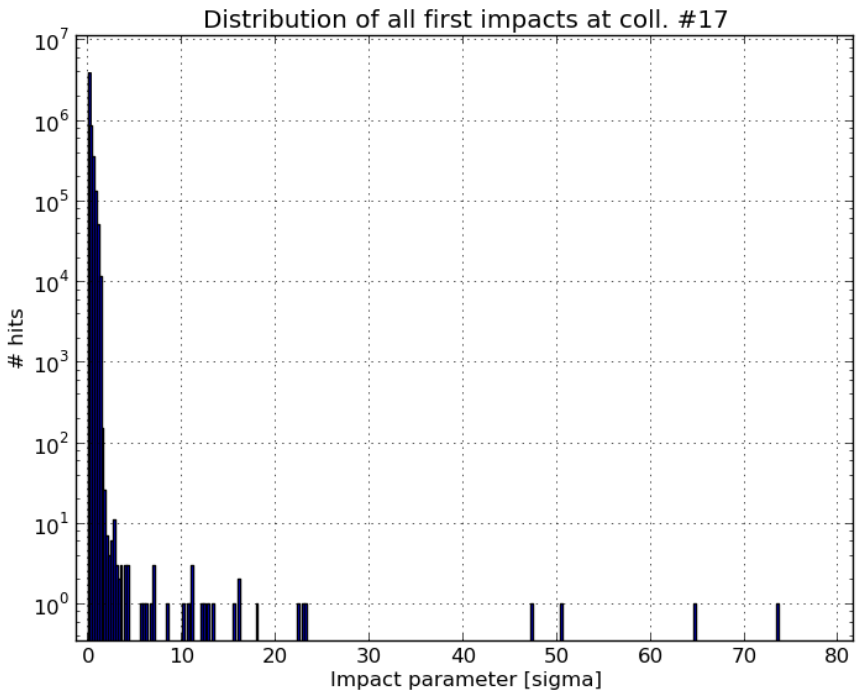
Dispersion corrected

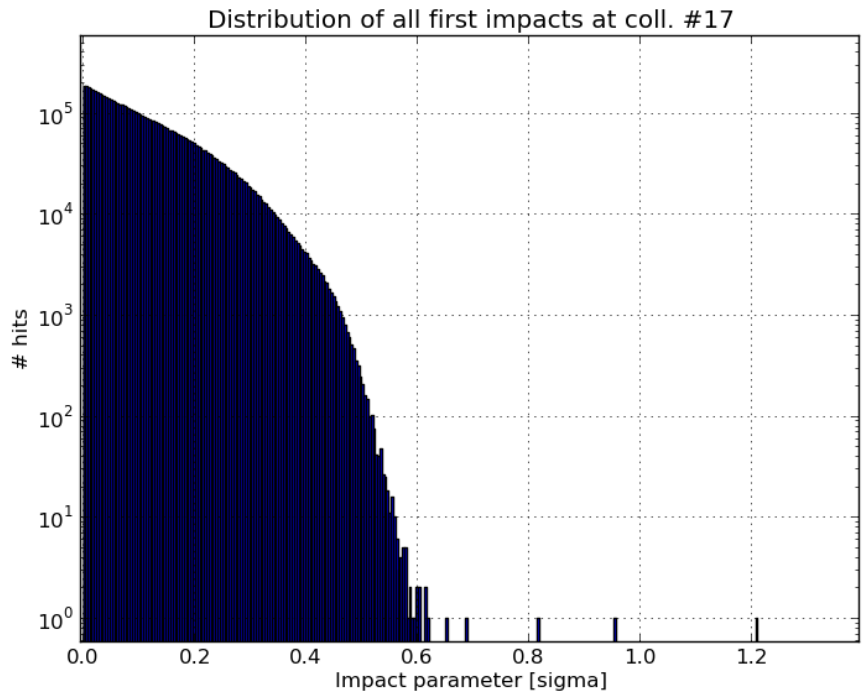


Hor. halo, first impacts on considered primary

- 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





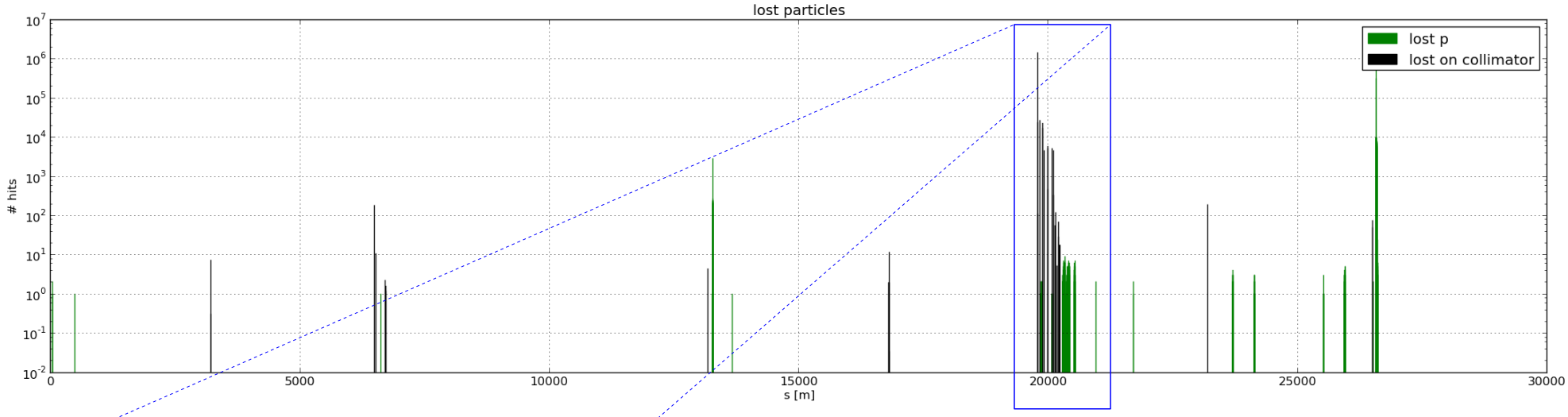
- Dispersion not corrected
- Non realistic impact parameters
- First impacts on other coll.

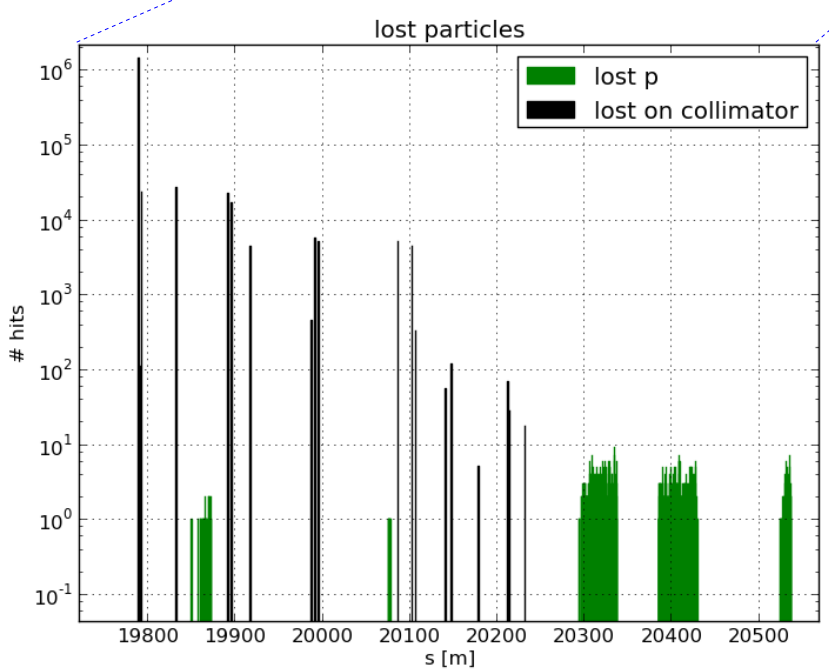
- Dispersion corrected
- All impacts within 1.2 σ
- Much less impacts on other collimators.

Crossing angles

- IP1 (V): 295 μrad
- IP2 (V): 240 μrad
- IP5 (H): 295 μrad
- IP8 (H): 305 μrad

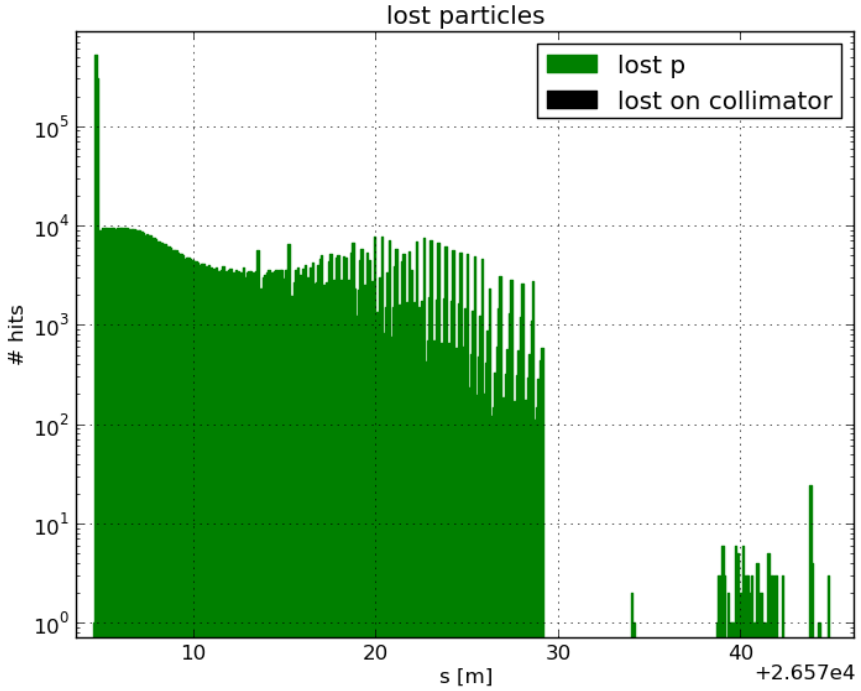
Vertical halo, 6 σ, dp/p = 0 loss map for the whole ring

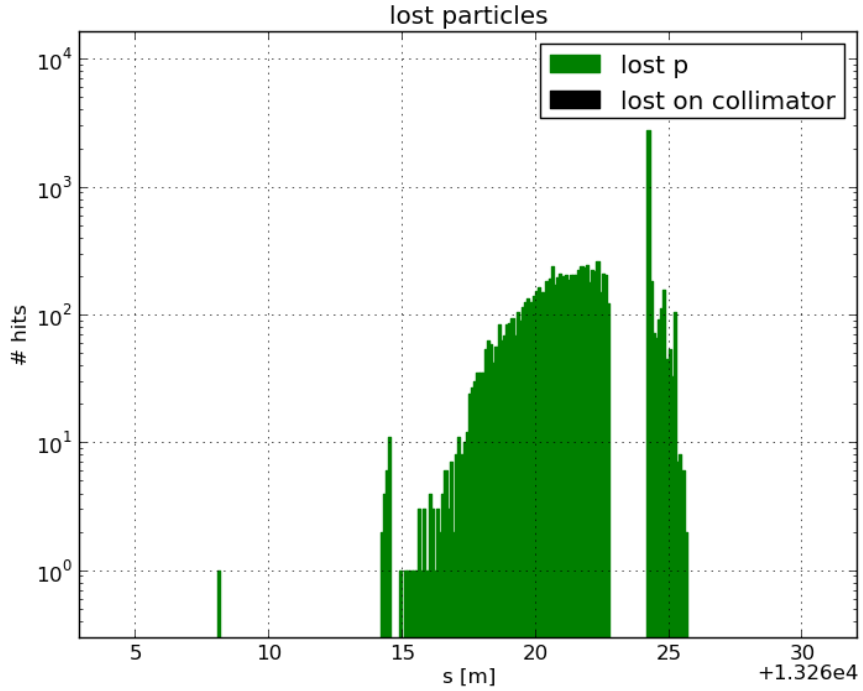




- Global loss map with standard simulation parameters worked at first attempt
  - MadX, Sixtrack, Collimation, trajectory
- New loss map is now more realistic
- Many losses outside collimators
- Leakage around other IPs

Vertical halo, 6 σ, 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.