

Muon Collider Tracking Meeting

Status of the digitization

P. Andreetto, S. Pagan Griso, A. Gianelle

March 26, 2021

Stable code

Code in <https://github.com/MuonColliderSoft/MuonCVXDDigitiser> (branch master)

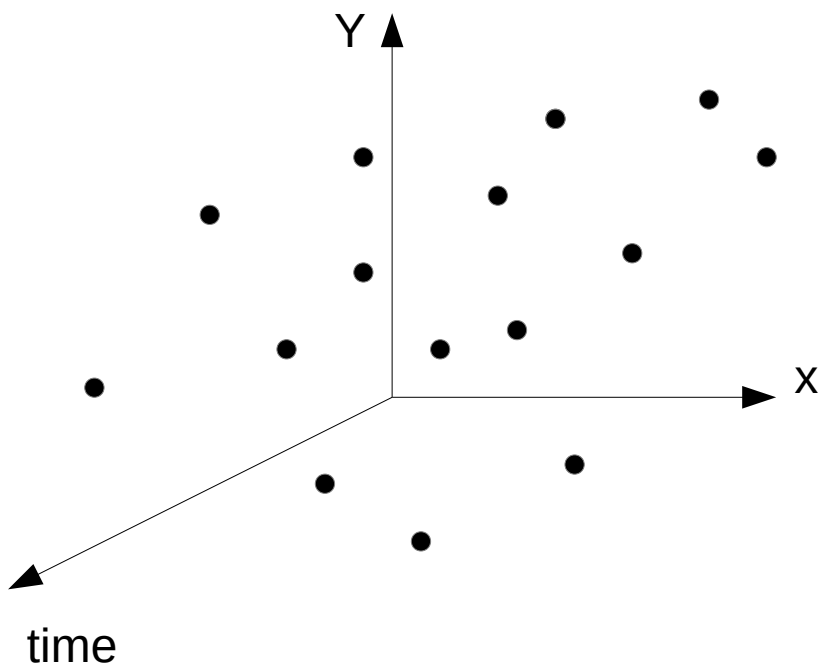
Validated by Simone (see other presentation)

Complete processing from simulated to tracker hits:

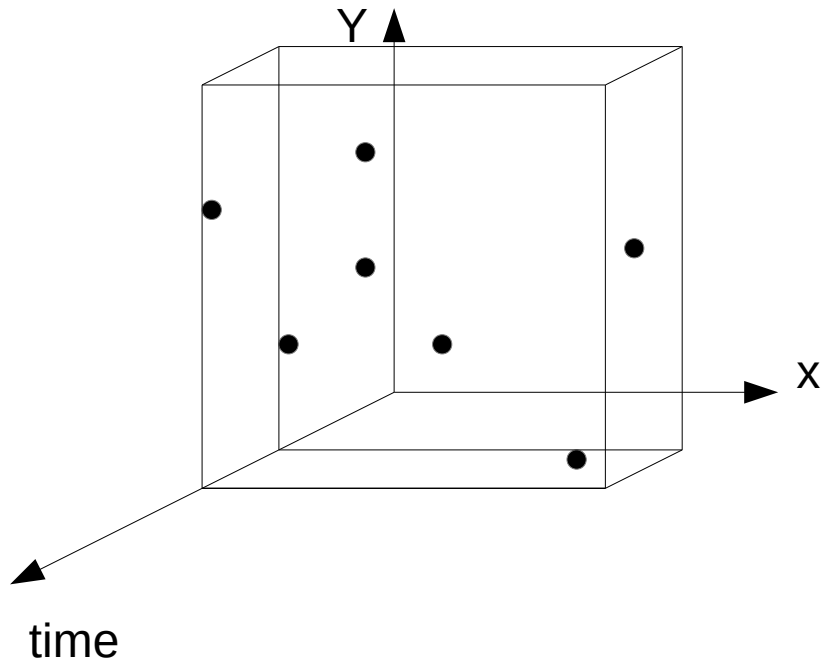
- One simulated hit → one tracker hit
- Starting point <https://twiki.cern.ch/twiki/bin/view/CMSPublic/SWGuidePixelDigitization>
- Changed the diffusion process and hit reconstruction

Time based implementation

- Simulated hits are placed in space and time

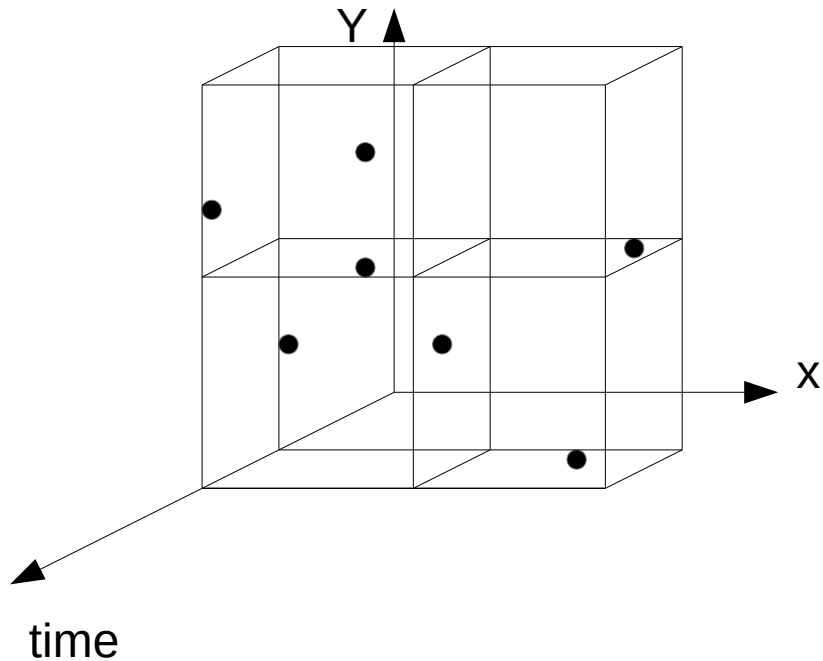


Time based implementation



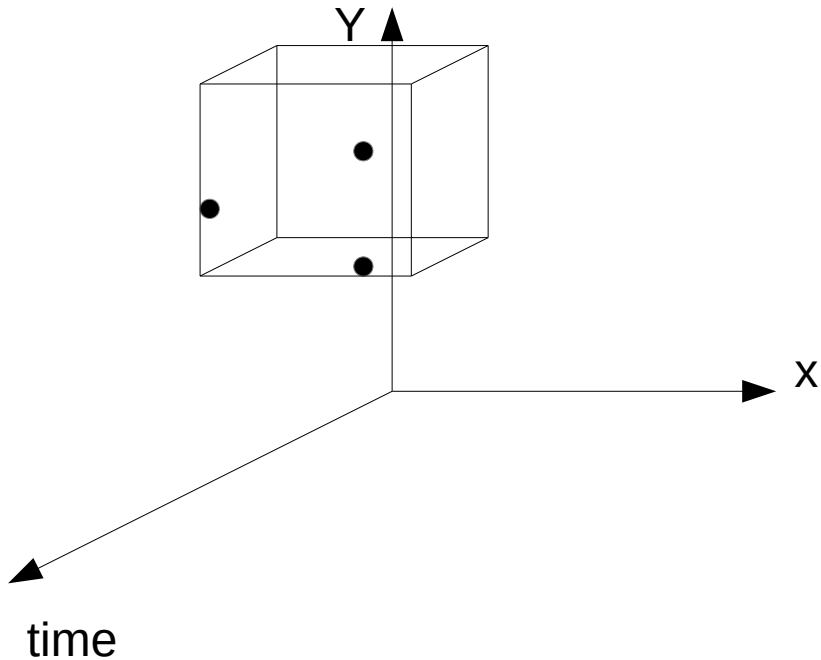
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- We can take a slice of space and time, with simulated hits sorted according to the time

Time based implementation



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- The volume of space-time is partitioned according to the ladders (multi threading)

Time based implementation



- Simulated hits are placed in space and time
- We can take a slice of space and time, with simulated hits sorted according to the time
- The volume of space-time is partitioned according to the ladders (multi threading)
- All the simulated hits in a ladder must be aggregated with a suitable algorithm

Aggregation of simulated hits

Aggregation consists on 2 steps:

- Pixel charging process:
 - All the hits in a ladder are processed independently one another
 - The usual diffusion process is used
 - Charges are aggregated on the sensor
- Hit reconstruction:
 - Identification of cluster of pixels (threshold algorithms, i.e. HK)
 - From cluster to tracker hits (still under discussion)

References

For further details: <https://issues.infn.it/jira/browse/MC-1>