

Parallelizing particle track simulations in gas based charged particle detectors

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Micropattern Gaseous Detectors (MPGDs) rely heavily on the simulation of the particle passage as conducting these studies allows scientists to cut huge costs and development for prototyping. Even though Garfield++ is a very important part of the simulation of MPGDs, it is very comprehensively intensive particularly when large detector volumes and high gas gains are required. In order to mimic the interaction of relativistic particles through gaseous detectors, High Energy Electro-Dynamic (HEED) photo absorption ionisation (PAI) model was added in the parallel Garfield toolkit (pGarfield). Thus, the whole track of an ionising particle through a detector was simulated with the help of the new pGarfield/HEED implementation. The results will illustrate how parallelization reduced the amount of time and CPU power required for computation of the full simulation. Additionally, a number of studies were conducted for further optimisation and the findings of those studies will also be reported.

Alternate track

1. Sustainability (accelerators, detectors, computing)

I read the instructions above

Yes

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