

Status of HFT CA track finder. Grid

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Calculation speed

With pileup

- Grid: 12.4 ms
- Singlets: 16.8 ms

Efficiency (%)	Doublets (ms/ev)	Triplets (ms/ev)	Tracks (ms/ev)
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Without grid

88.4	13989.1	792.8	246.5
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With grid (optimal hit area)

88.0	198.3	x70.6	654.5	194.6
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With grid and triplet vectorization

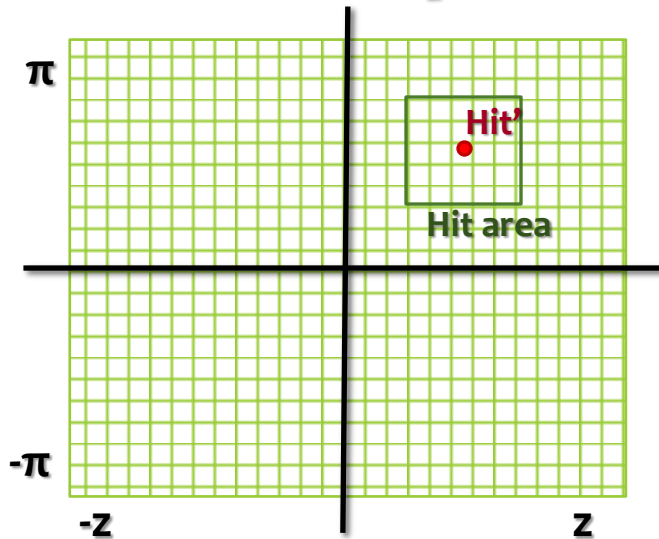
88.0	204.9	x68.2	84.5	x7.7	194.1
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With grid and triplet vectorization; different hit area for high and low momentum tracks

88.4	121.6	x114.7	67.3	x9.8	198.6
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Backup

Grid implementation



- Grid is based on Z-coordinate and angle.
- Track finding direction – from outer station.
- Main steps of Grid usage:
 - Extrapolate hit -> hit' to the previous station in direction of PV;
 - Create Hit area around the hit' using dz and $d\alpha$;
 - Search for the next hit of the doublet inside Hit area.
- Number of bins in Grid depends on the number of hits on station.

Testing

- 5 events with pileup, 10 - ~150 tracks;
- Objective: optimal Hit area;
- Conditions: best efficiency, good calculation speed;
- Dependences:
 - $(dz, d\alpha)$ -> (efficiency, doublets calculation speed);
 - (number of doublets) -> (triplets calculation speed).