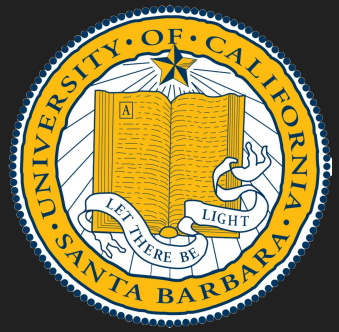


Rotation Corner Studies

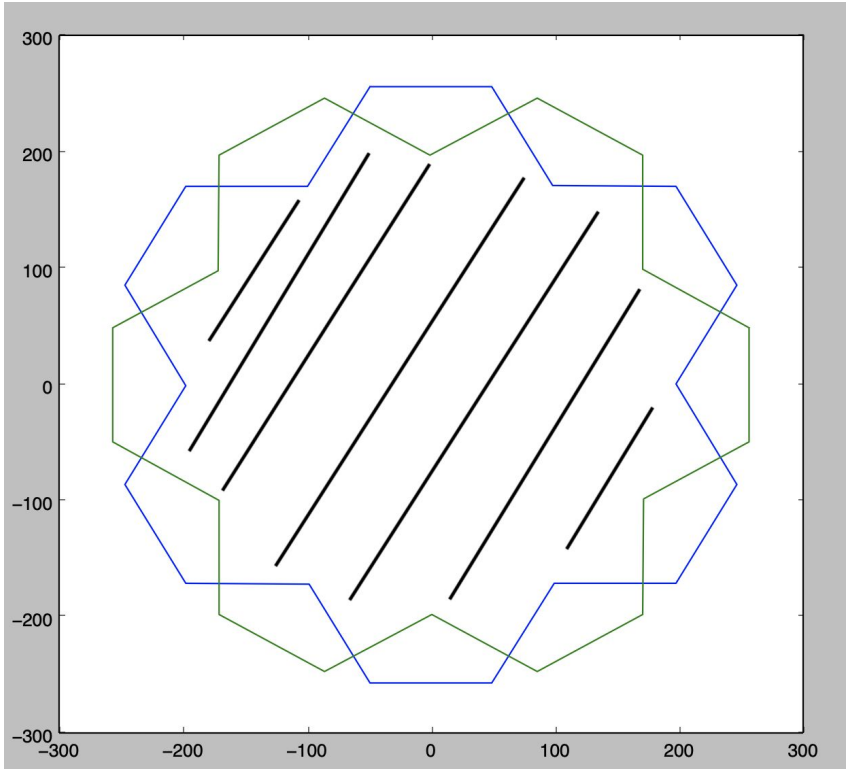
Hongyin Liu

12/01/2021

DMX

Method

Corner Ratio = total corner hits / intersection hits



- Blue: unrotated (v12)
- Green: rotated (v13)
- Black area: intersection

Corner Electron Ratio- Post Trigger Skim

	Corner Ratio (Post-Trigger)	1000 MeV	100 MeV	10 MeV	1 MeV	PN Background
v12 (v3.0.0)	Total number of events	~950k	~560k	~830k	~600k	~500k
		0.038	0.003	0.0014	0.0006	0.0084
V13 (V3.0.0)	Total number of events	~390k	~180k	~300k	~230k	200k
		0.044	0.00785	0.0076	0.0023	0.0091

Note for v13 rotation

- For each mass of v13 simulation, there is about 150 hits on neither geometry. Usually out of a total of 300k hits.
- This problem does not occur for v12 simulated hits.
- Suspected reason: the cell maps in v13 simulation does not have truncated cell at the borders, so there could be pointy cell edges outside the geometry causing this.

Sample code for this analysis

- https://github.com/Hongyin-bug/LDMX_rotation_stuffs/blob/main/corner_studies.py