# Pair background with different B fields

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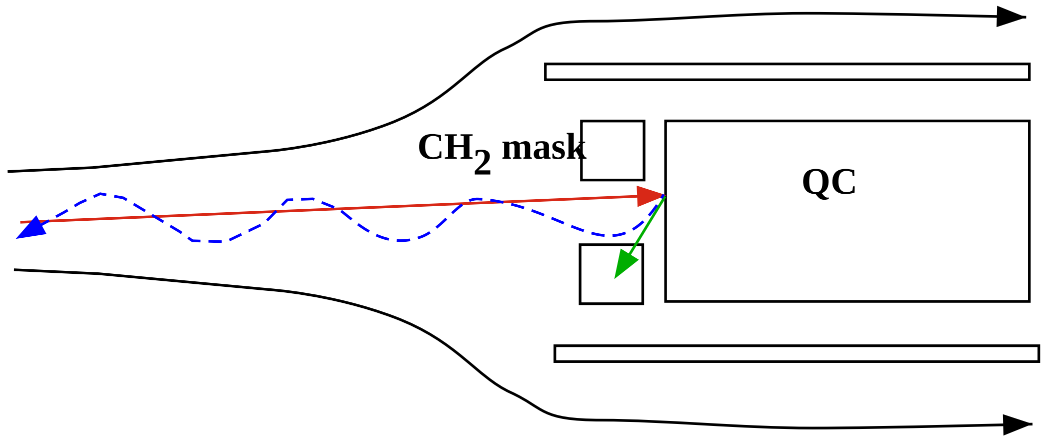
Previous simulation:
-Uniform B field of 2T
(compensation and Q magnets OFF)

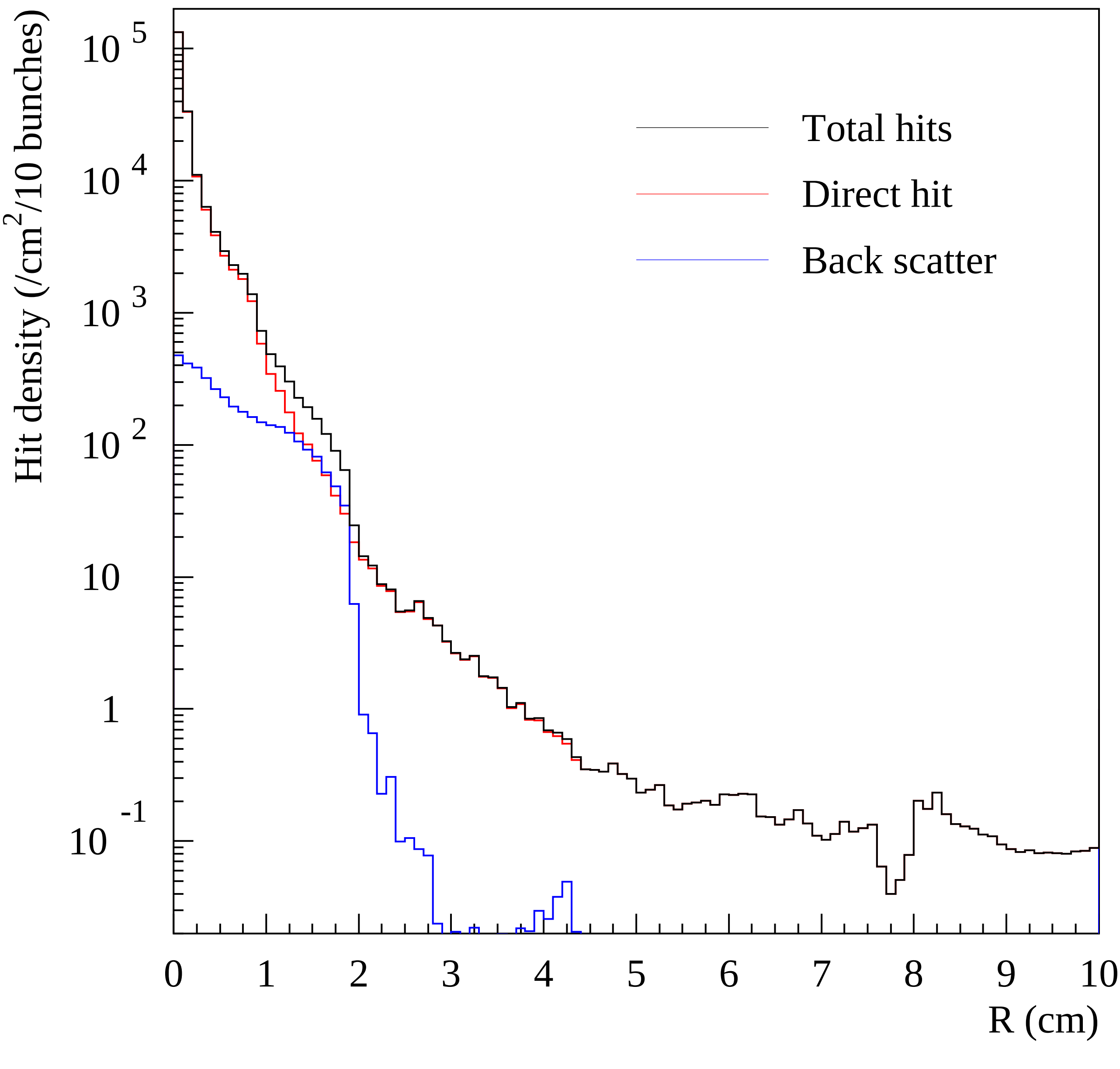
Realistic B field
-> Suppression of backscatted electrons is anticipated

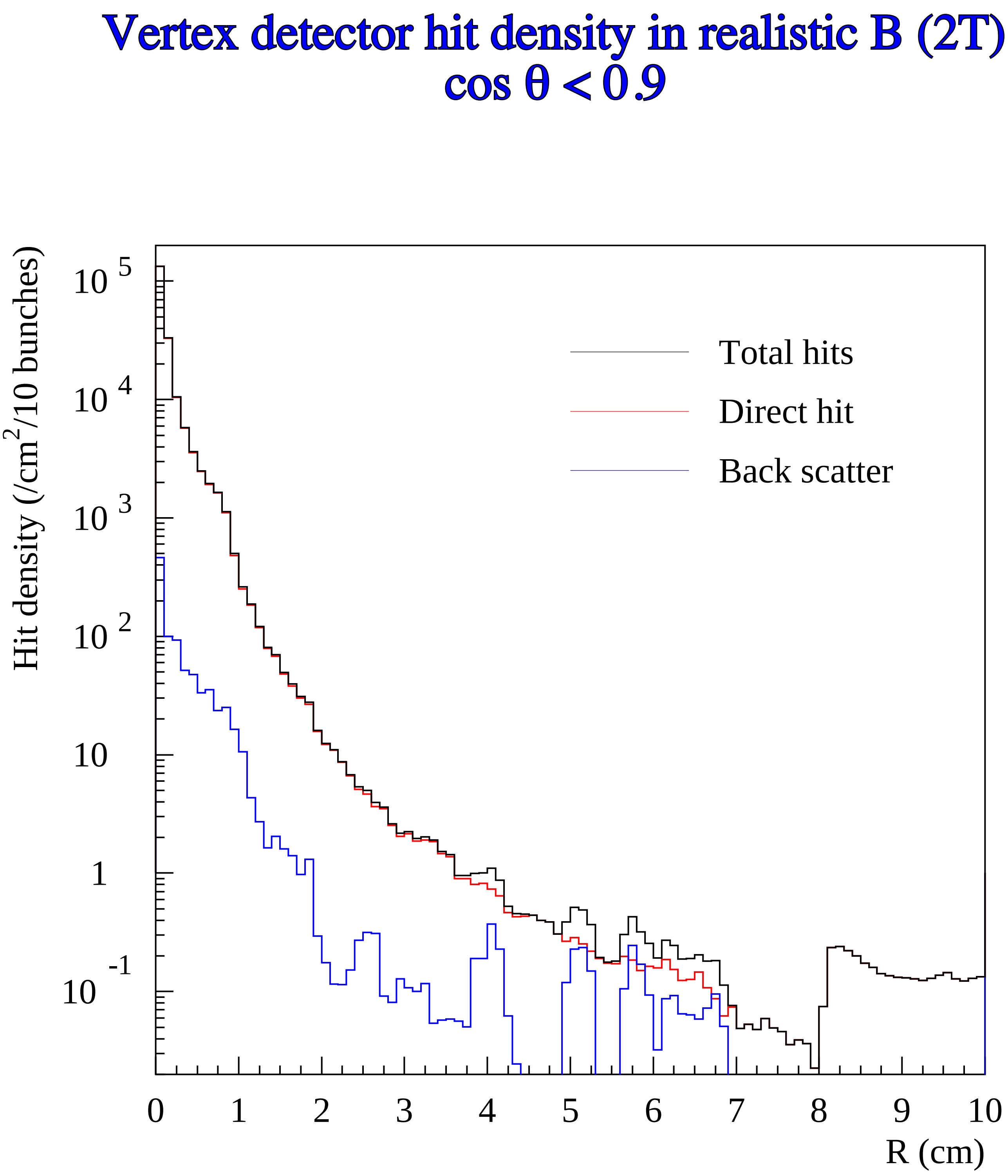



Stronger solenoid B field (3 T and 6 T)

# Comparison between uniform and realistic fields

## Vertex detector hit density in uniform B (2T)
## cos θ < 0.9




Vertex detector hit density in realistic B (2T)
cos θ < 0.9
Hit density (/cm2/10 bunches)
R (cm)
Total hits
Direct hit
Back scatter
10 5
10 4
10 3
10 2
10
1
10 -1
0
1
2
3
4
5
6
7
8
9
10

Energy deposit on the QC magnet;

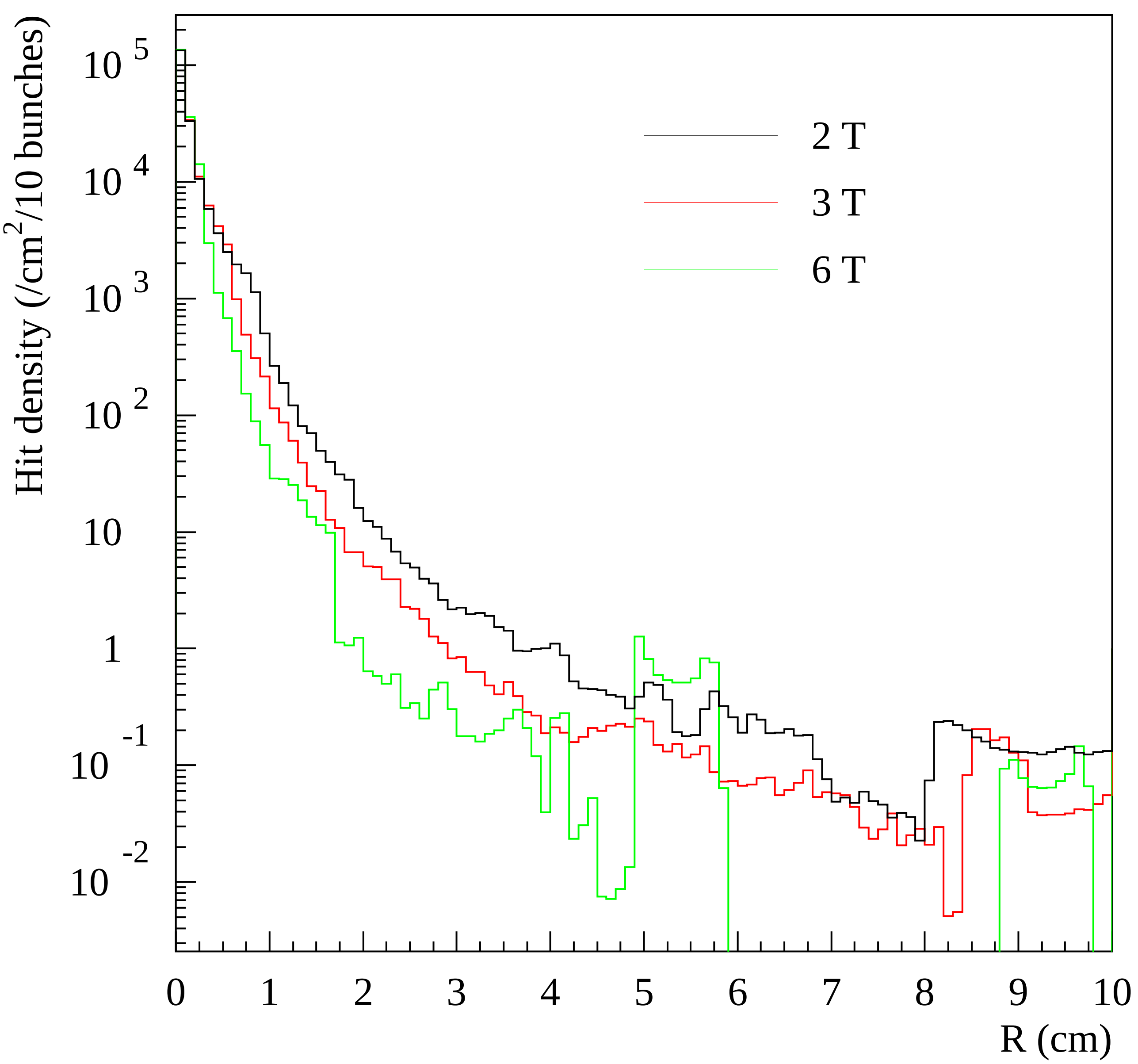
**w/o -> ~13 TeV/bunch**

**with -> ~25 TeV/bunch**

Neutron background will increase.

# Vertex detector hit density in stronger B fields

## cos θ < 0.9



# Conclusion

When the B fields of compensation magnet and the quadrapole magnet are taken into account, back scattering of the pair background from the QC to the IR region decreases.

On the other hand, energy deposit in the quadrapole magnet increases, which will results in the increase of neutron background.

With stronger solenoid magnet, the vertex detector hit density decreases.
With 3 T, the innermost layer of the vertex detector can be put at r=18mm.