



Silicon Tracker for $\sqrt{S} = 10$ TeV MuC Detector

- Need to design a tracker detector for $\sqrt{S}=10$ TeV muon collisions
- Use `FastTrackCovariance` package written by F. Bedeschi and M. Selvaggi, used for FCC-ee study
- Adapted by D. Zuliani for MuC at 3 TeV
- Code completely analytic, calculate tracks parameter resolution considering magnetic field and multiple scattering

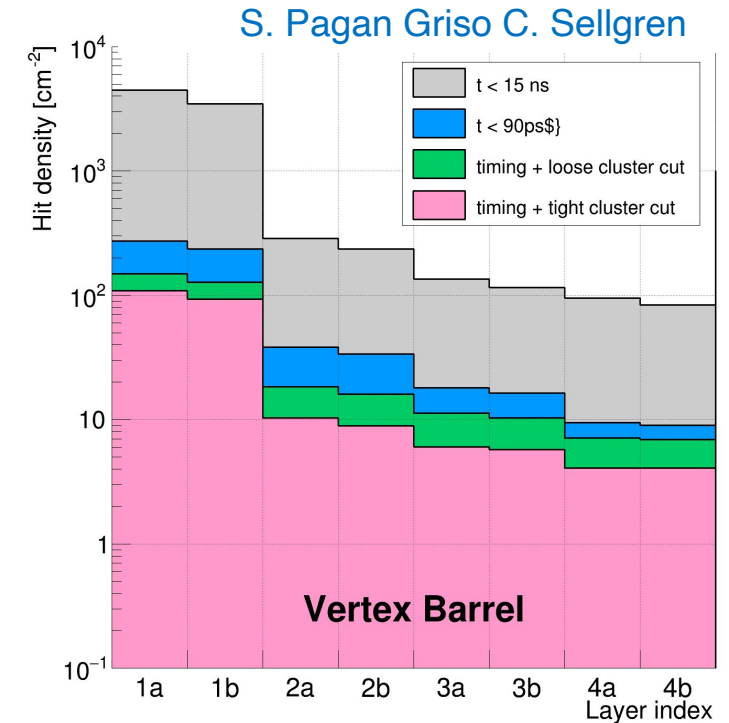
Silicon Tracker for $\sqrt{s} = 10$ TeV MuC Detector requirements

Tracker requirements

- Timing: high resolution to suppress out of time BIB.
- Energy deposition: exploit different cluster shapes.
- High granularity

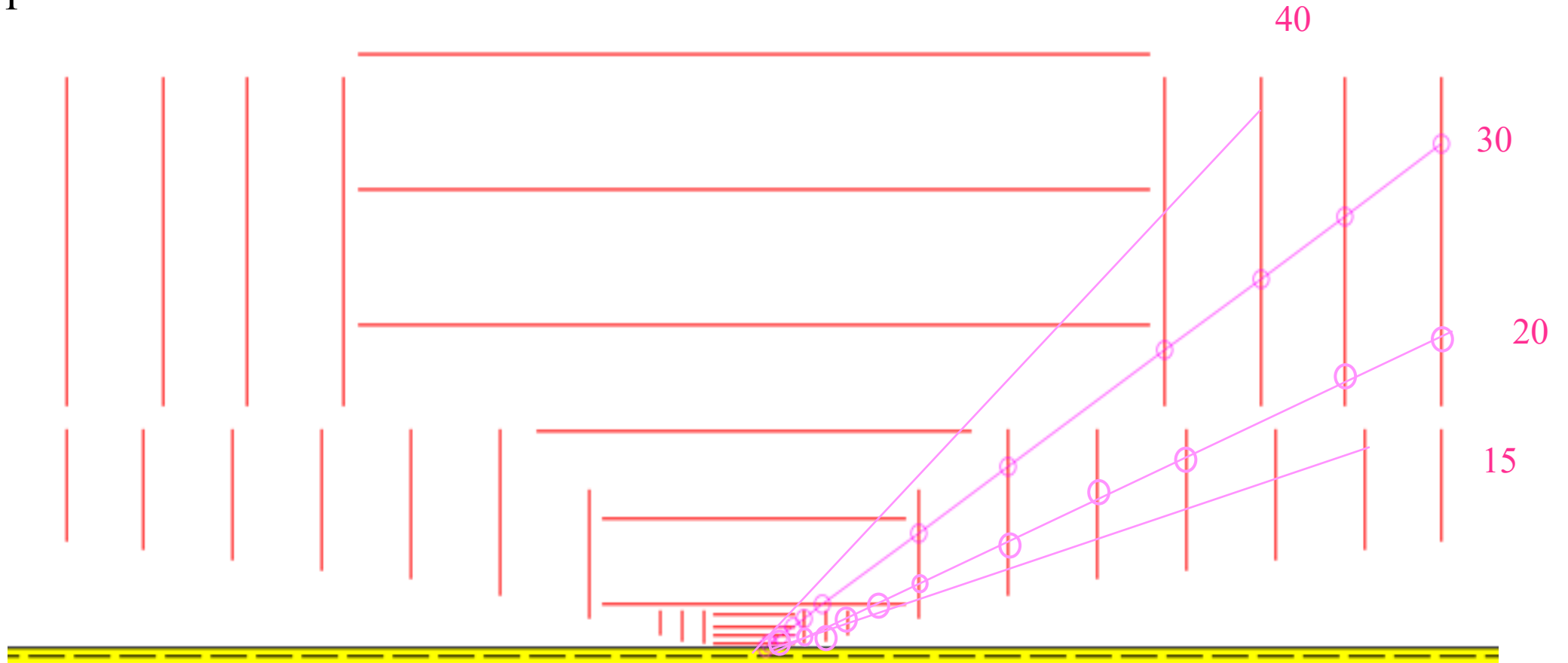
Higher occupancies respect to LHC detectors
but crossing rate ~ 100 kHz vs 40 MHz

Detector reference	Hit density [mm^{-2}]		
	MCD	ATLAS ITk	ALICE ITS3
Pixel Layer 0	3.68	0.643	0.85
Pixel Layer 1	0.51	0.022	0.51



Preliminary configuration: CLIC

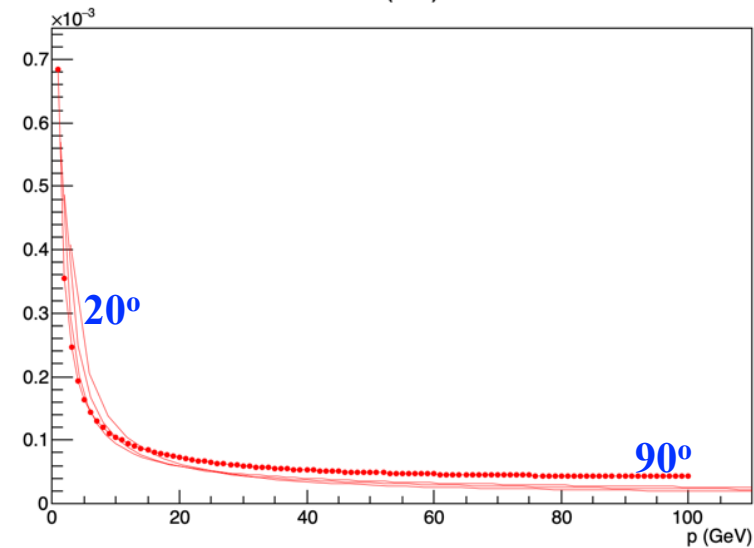
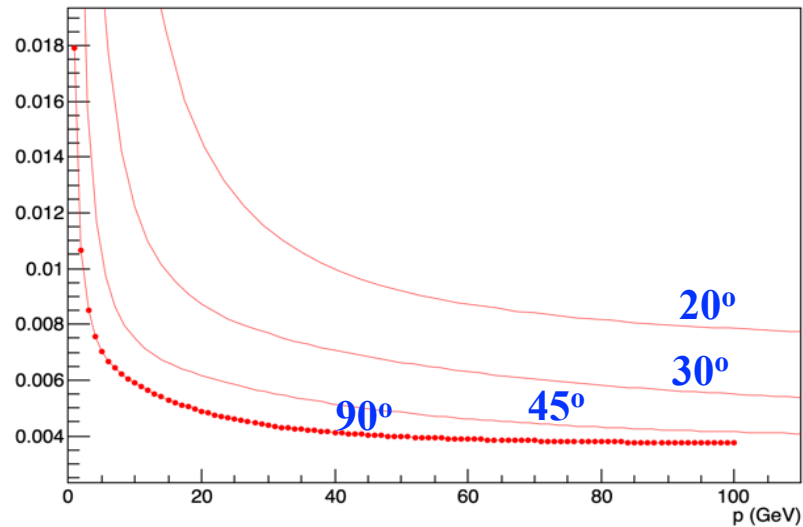
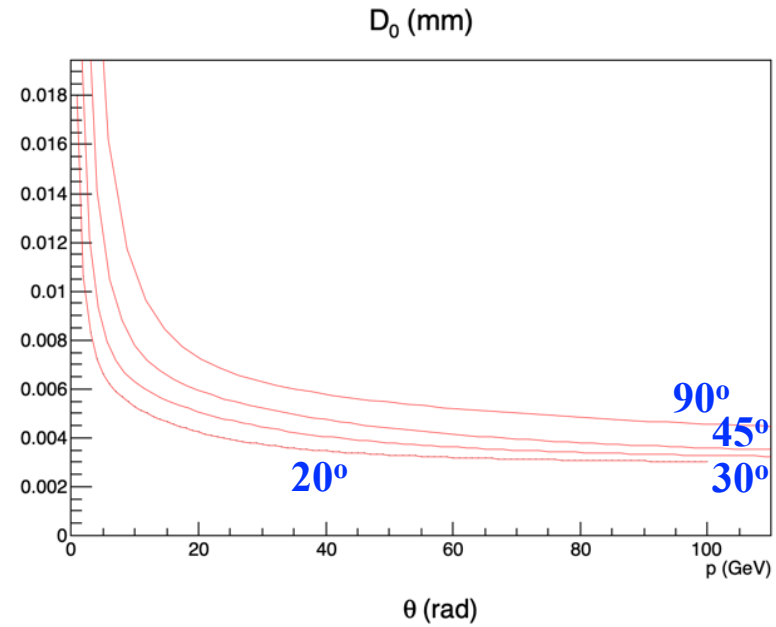
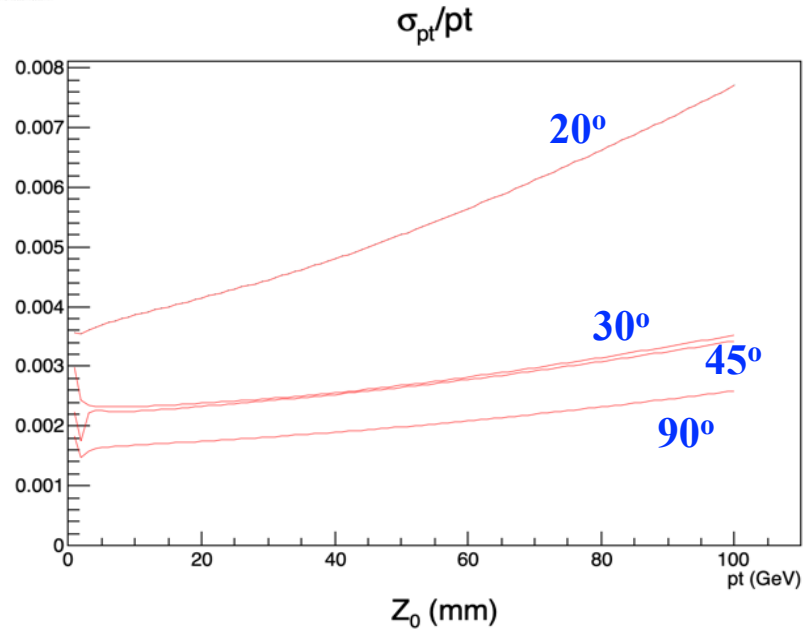
B field 4 T



Measurement points: 10

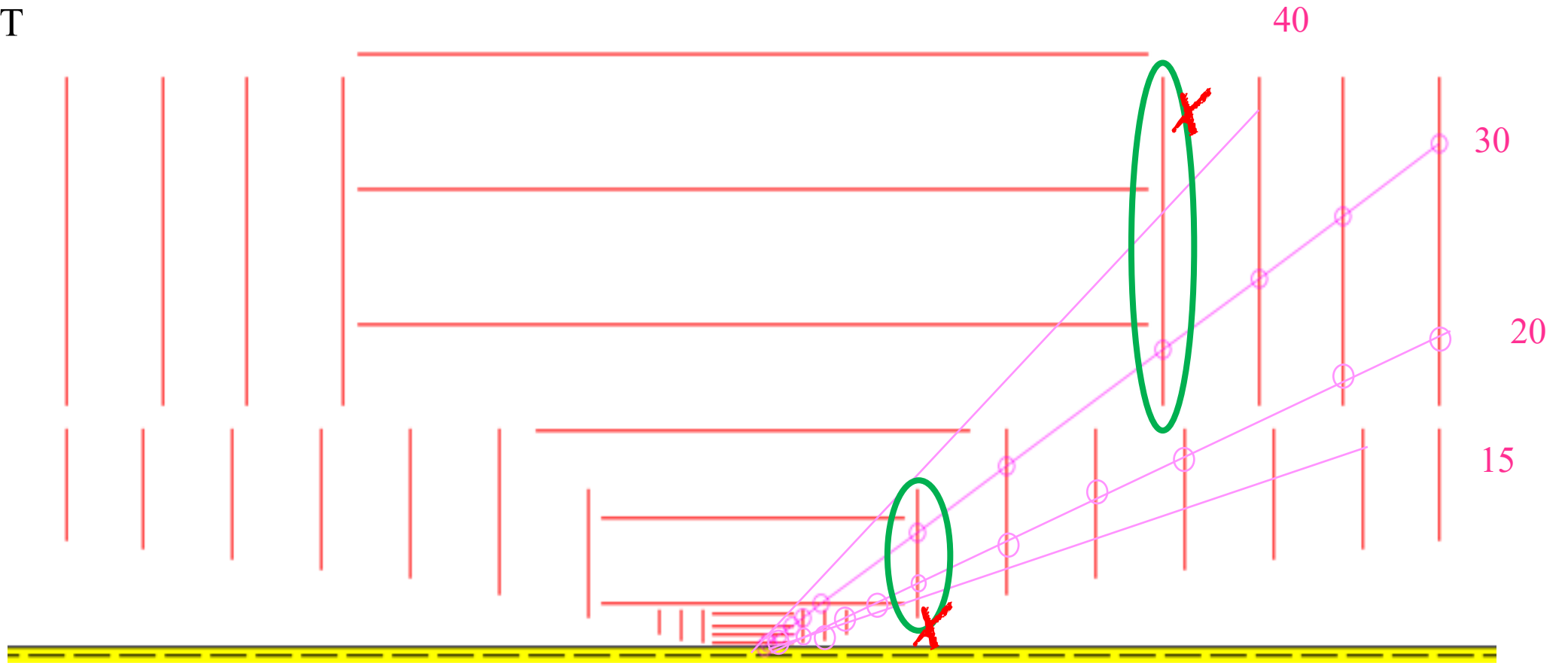
With low background 6 points are already enough.

Tracks parameters resolution–Higgs momenta range



Configurations under study

B field 4 T



Remove or move the position

Attività in Padova

- * Coordinamento di attività di R&D per lo sviluppo di rivelatori al silicio per futuri (e meno futuri) acceleratori: CSN1, CSN3 e CSN5
- * CSN1: interessati FCC-ee e Muon collider
- * Responsabile: P. Giubilato (coordina anche DRD7)
- * Tabella dettagliata delle richieste per un piano dettagliato di 3 anni seguirà a breve.
- * Richieste:
 - a. Post-doc e borsa di dottorato nei prossimi 3 anni
 - b. Finanziamento per materiale, in particolare per Muon Collider e CSN1 distribuito sugli anni e per il 2025