

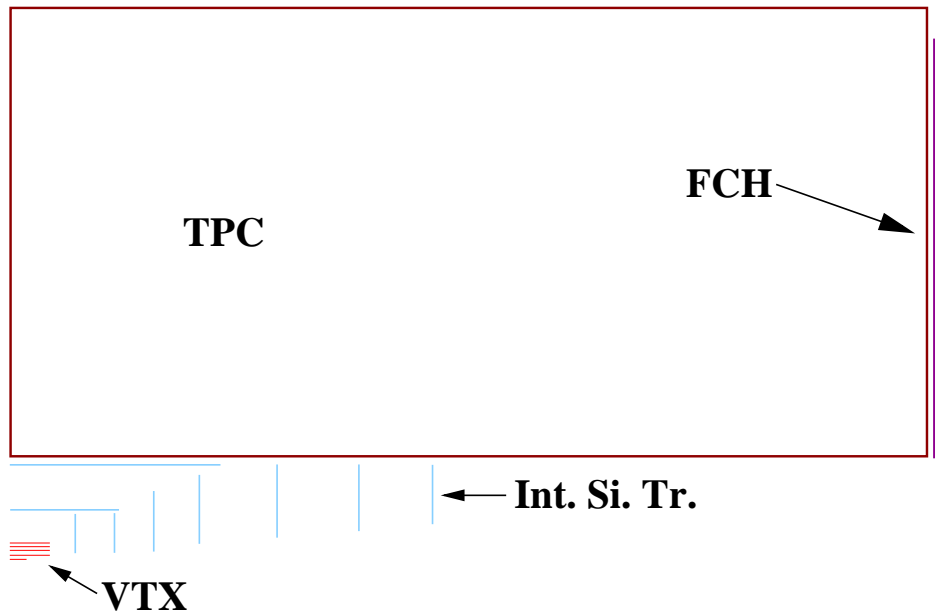
# Forward tracking

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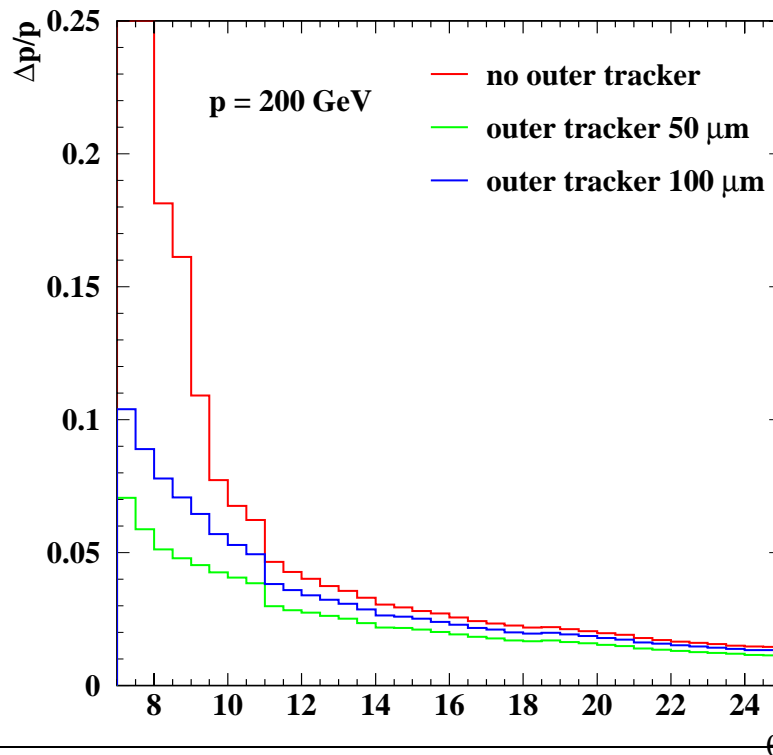
DESY-Zeuthen

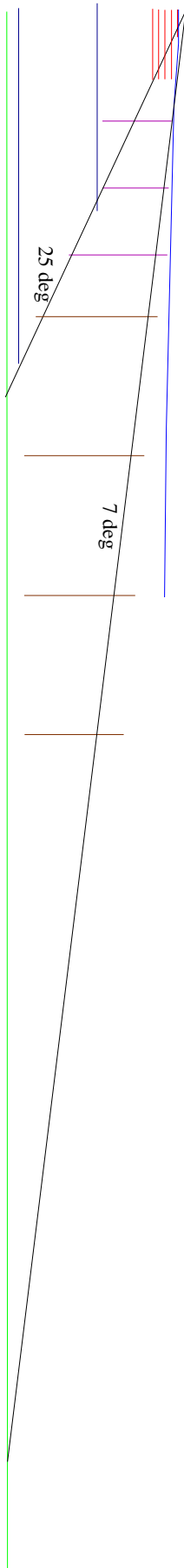
Forward tracking at TESLA:

- outer forward tracking
- forward silicon



- Precise forward chamber between TPC and ECAL ( $\sigma \approx 50\mu\text{m}$ )
- Probably straws, honeycomb or something similar
- Needed for momentum resolution at low angles

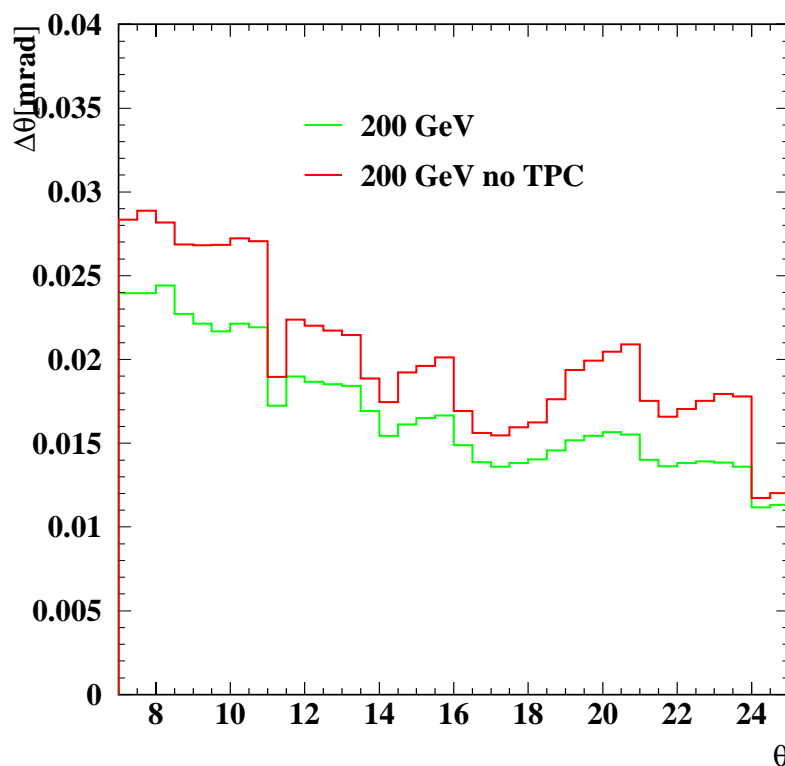




- layers 1-3 pixels, rest strips
- pixel size  $50 \times 200 \mu\text{m}$  with alternating orientation
- strips back to back or double sided with  $25 \mu\text{m}$  resolution

# Precise forward tracking needed for

- $\mu$ -momentum resolution **already shown**
- polar angle ( $\theta$ ) resolution:
  - mainly for Bhabha acolinearity to measure beamstrahlung and beamspread
  - beamspread  $\sim 10^{-3}$
  - effect of detector resolution  $\Delta\sqrt{s'} = \Delta\theta / \sin\theta$
  - ➡ need  $\Delta\theta \sim \text{few} \times 10^{-5}$
  - electrons pass TPC field cage/cables with a very small angle
- ➡ better assure resolution with silicon only



## What is available for the TDR?

- rough mechanical design including material of supports etc.
- simulation studies for the important physics reactions, including pattern recognition

## Which kind of R&D is going on and will be described in an LC-note?

- nothing, the detectors are pretty standard

## What's missing for the TDR and how will it be attacked?

- contribution of forward tracking to hadronic energy flow

## Who's writing what?

- all me, I fear

## Which physics reaction(s) will be used as benchmark? reaction(s) for detector performance

- acolinearity of Bhabha's for beamstrahlung
- high momentum muons from  
 $e^+e^- \rightarrow W^+W^-$ ,  $W \rightarrow \mu\nu$  and  $e^+e^- \rightarrow \mu^+\mu^-$

## Very preliminary cost estimate

- not yet available, but should be a tiny fraction of the whole detector