Performance of SPD tracking systems

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New generator

Particles: μ^+, μ^-

1 particle per event
(3e6 events generated)

Cosθ [-1, 1]

pT [0.15, 4] GeV

Constructions: Straw +

1) MAPS
Number of layers = 4
Chips thickness: 50 mkm
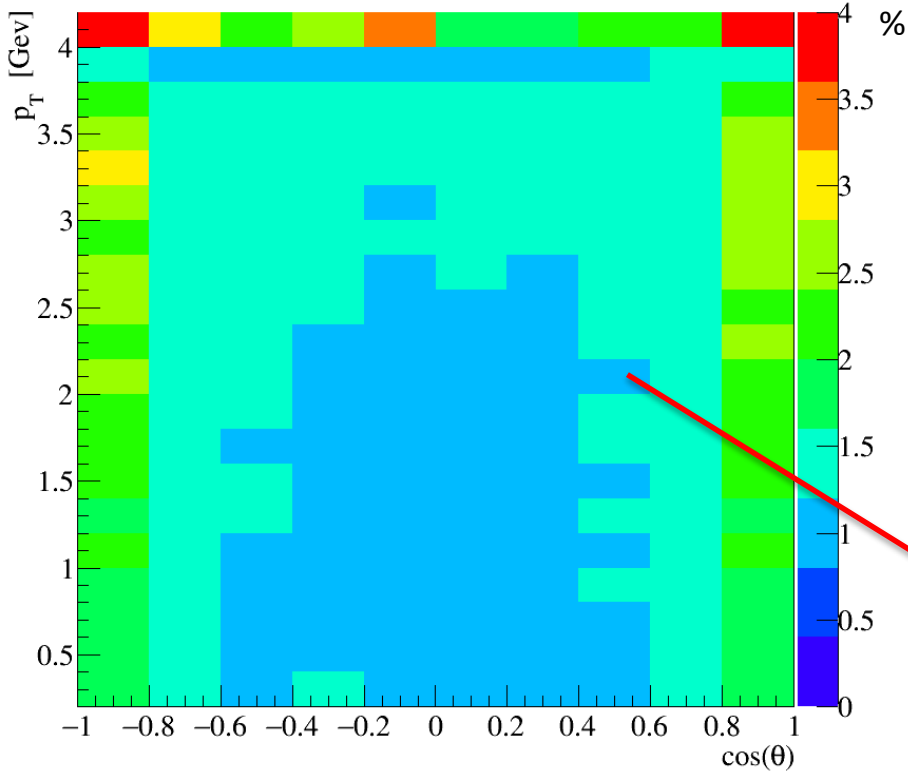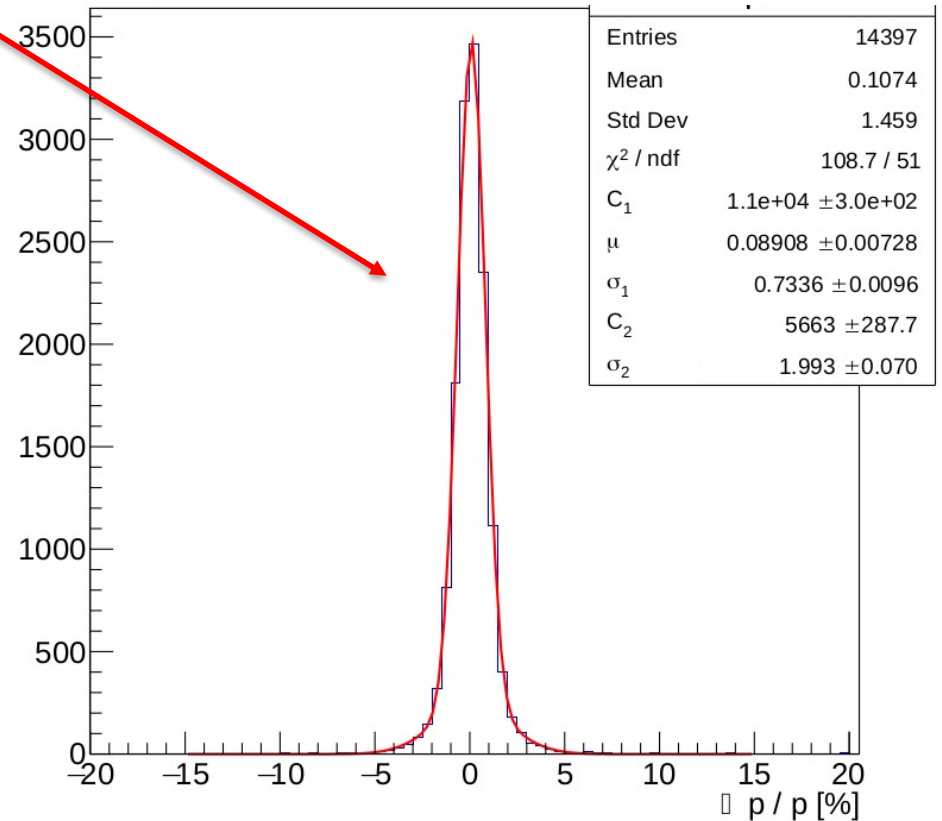
2) DSSD
Number of layers = 5
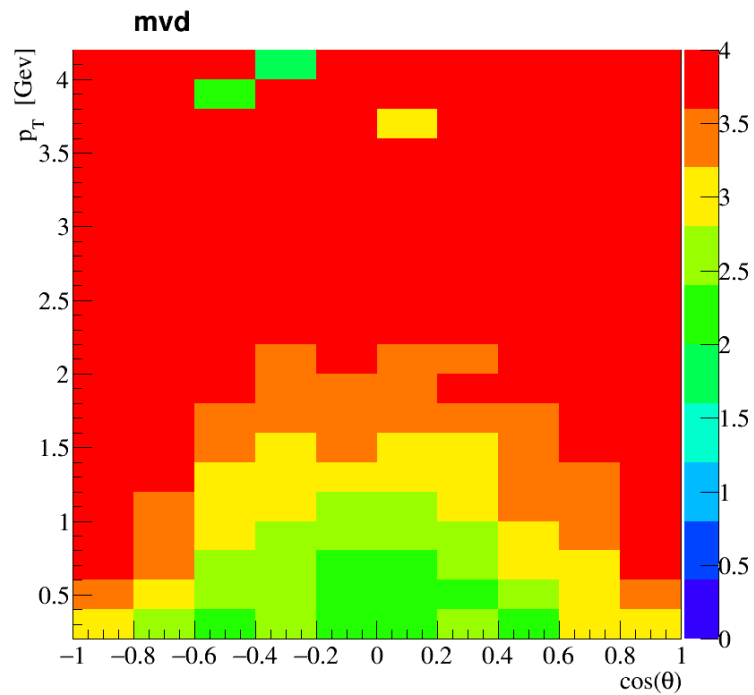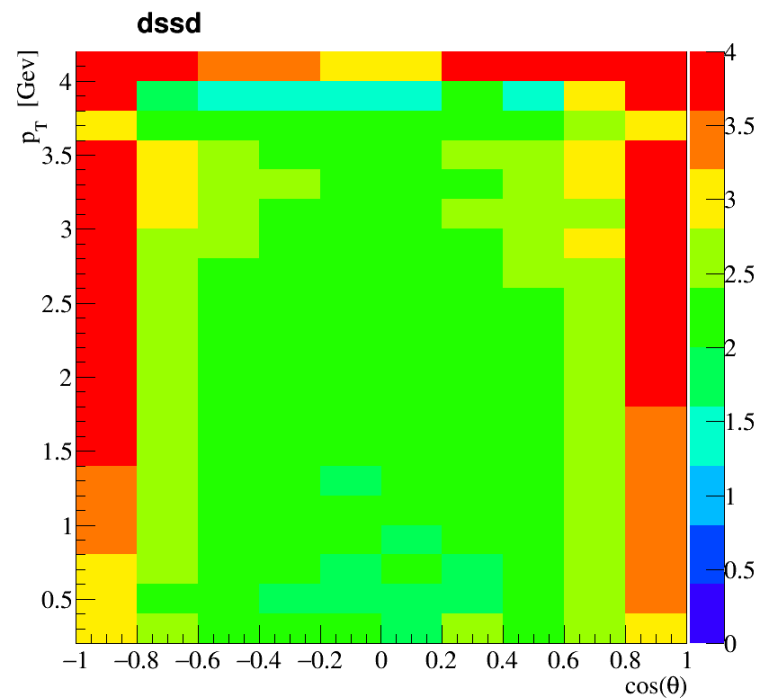*Chips thickness: 300 mkm*

3) MVD (micromegas)

maps

Fit = Two gauss functions with the parameter Norm = kTRUE (the result is divided by sqrt(2*Pi)*sigma)

Entries	14397
Mean	0.1074
Std Dev	1.459
χ^2 / ndf	108.7 / 51
C_1	1.1e+04 $\pm$3.0e+02
μ	0.08908 $\pm$0.00728
σ_1	0.7336 $\pm$0.0096
C_2	5663 $\pm$287.7
σ_2	1.993 $\pm$0.070

$$\sigma = \frac{C_1}{C_1 + C_2} * \sigma_1 + \frac{C_2}{C_1 + C_2} * \sigma_2$$
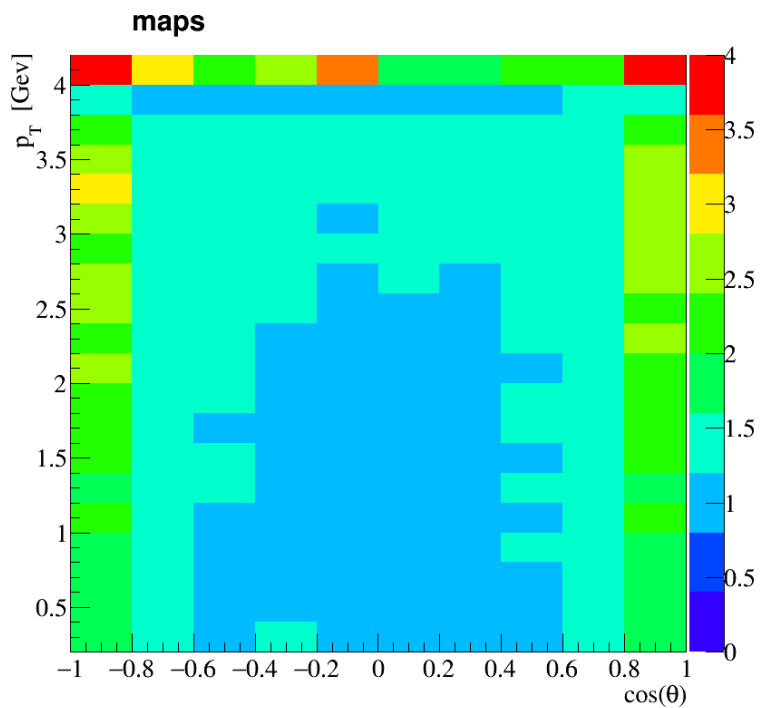
Backup

MAPS

```
//------------------------------------------------
// Number of layers = 4
// Type of chips (all layers): MAPS (all layers)
// Chips thickness (all layers): 50 mkm
//------------------------------------------------

// layers:
mapper->SetDefaultLadderPars(2, 1, 0, 70*mm);
mapper->SetDefaultLadderPars(2, 2, 0, 127*mm);
mapper->SetDefaultLadderPars(2, 3, 0, 184*mm);
mapper->SetDefaultLadderPars(2, 4, 0, 241*mm);
//mapper->SetDefaultLadderPars(2, 5, 0, 298*mm);

mapper->SetDefaultLadderPars(2, 2, 15*mm);
mapper->SetDefaultLadderPars(2, 3, 0.05*mm);

// chips:
mapper->SetDefaultChipPars(1, 0, 14.336*mm);
mapper->SetDefaultChipPars(1, 1, 14.336*mm);
mapper->SetDefaultChipPars(1, 2, 0.664*mm);
mapper->SetDefaultChipPars(1, 3, 0);
mapper->SetDefaultChipPars(1, 4, 512);
mapper->SetDefaultChipPars(1, 5, 512);
mapper->SetDefaultChipPars(1, 6, 1);

mapper->SetGeometryPars(2,1); // set new parameters !

mapper->SetNLayers(4);
```

DSSD

```
//------------------------------------------------
// Number of layers = 5
// Type of chips (all layers): DSSD (all layers)
// Chips thickness(all layers): 50 mkm
//------------------------------------------------

// layers:
mapper->SetDefaultLadderPars(3, 3, 0.3*mm);
mapper->SetGeometryPars(3); // set new parameters !
```