A current status of the realistic reconstruction of Λ-hyperon in MPD (TPC & ITS)

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for the MPD collaboration

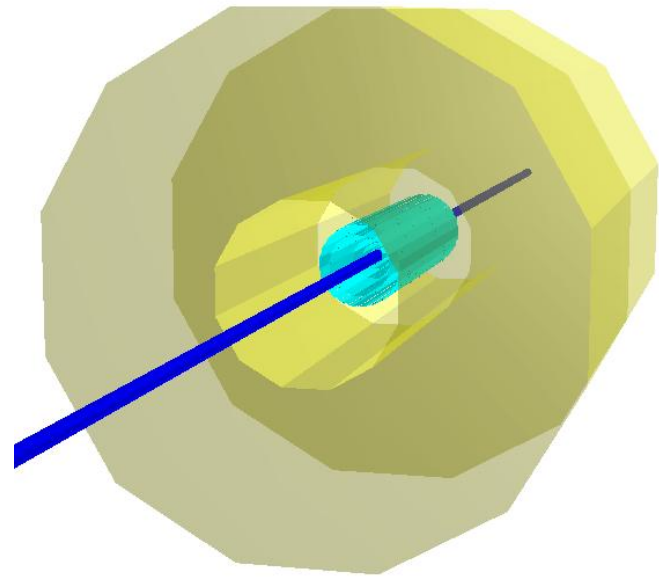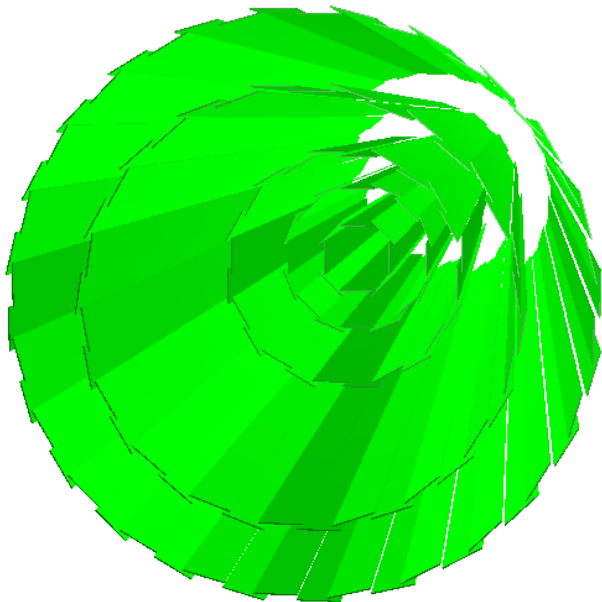VBLHEP, JINR, Dubna, Russia

- ➢ **Generator:** DCM-QGSM, Au+Au, 9A GeV, Minbias, 10k events
- ➢ **Geometry:** new TPC, new TOF, new ITS
- ➢ **Reconstruction:** ClasterFinder in TPC
- ➢ **PID:** Ideal vs Real *(A.Mudroch)*

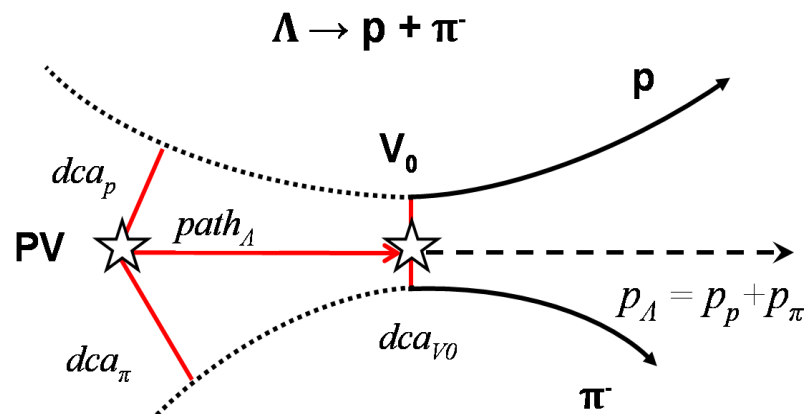*Yu.Murin, V.Kondrat'ev (SPb):*

ITS geometry: 5 layrs - MAPs+strip detectors

Digitizer in ITS (realistic response of detectors)

$$\Lambda \rightarrow p + \pi^-$$

Signal event topology defined selection criteria:

✓ relatively large distance of closest approach (DCA) to primary vertex of decay products
✓ small track-to-track separation in decay vertex
✓ relatively large decay length of mother particle

Invariant mass: Λ → p + π⁻

DCM-QGSM
Au+Au, 9A GeV
Minbias
Ideal PID
TPC+ITS

Mass = 1.1158
Sigma = 0.0013
Eff. = 6.7%
S/B = 18.5
$S/\sqrt{S+B} = 77.4$

Invariant mass: Λ → p + π⁻

DCM-QGSM
Au+Au, 9A GeV
Minbias
Ideal PID
TPC

Mass = 1.1160
Sigma = 0.0018
Eff. = 4.4%
S/B = 5.5
$S/\sqrt{S+B} = 59.3$

Invariant mass: Λ → p + π⁻

DCM-QGSM
Au+Au, 9A GeV
Minbias
Real PID
TPC+TOF+ITS

Mass = 1.1158
Sigma = 0.0013
Eff. = 6.5%
S/B = 17.7
$S/\sqrt{S+B} = 76.4$

Invariant mass: Λ → p + π⁻

DCM-QGCM
Au+Au, 9A GeV
Minbias
Real PID
TPC+TOF

Mass = 1.1160
Sigma = 0.0018
Eff. = 4.2%
S/B = 4.6
$S/\sqrt{S+B} = 57.2$