JÜLICH
FORSCHUNGSZENTRUM

$\Lambda_c \overline{\Lambda}_c \rightarrow \Lambda_0 \pi^+ \overline{\Lambda}_0 \pi^-$ Reconstruction

November 28, 2014 | Dariusch Deermann, hyperon seevogh meeting 28.11.2014

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- EvtGen / Input to the Simulation
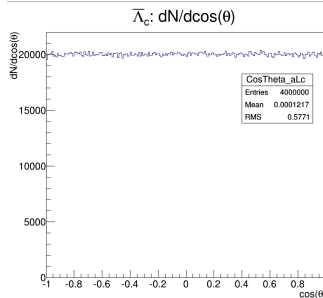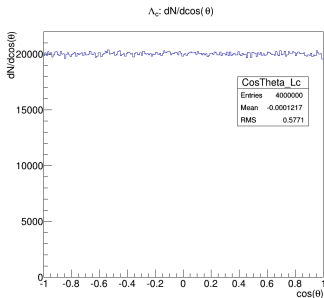- Reconstruction

EvtGen 15GeV/c

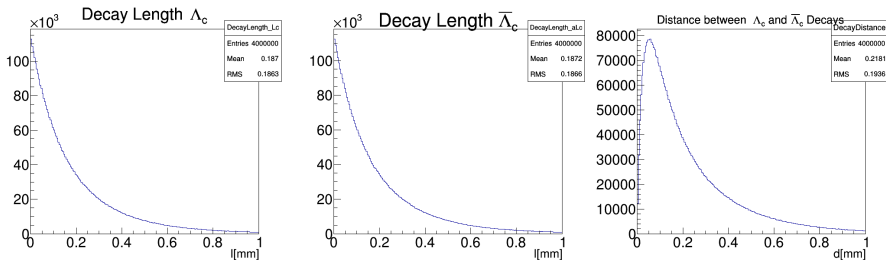Figure : Events have been equally distributed in cos(θ)

Figure : Decay lengths of Λ_c (187 μm), $\overline{\Lambda}_c$ (187 μm) and their distance (218 μm).
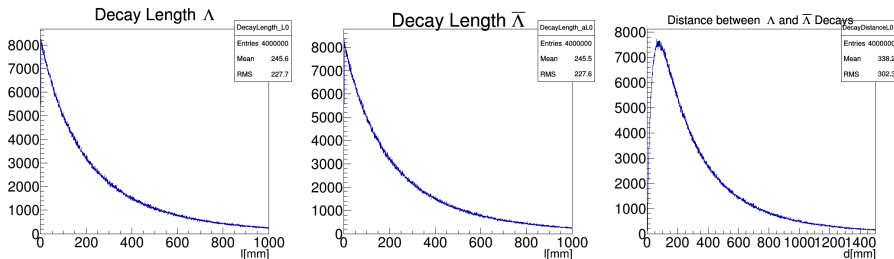
Figure : Decay lengths of Λ_0 ($24.6\,\mathrm{cm}$), $\overline{\Lambda}_0$ ($24.6\,\mathrm{cm}$) and their distance ($33.8\,\mathrm{cm}$).
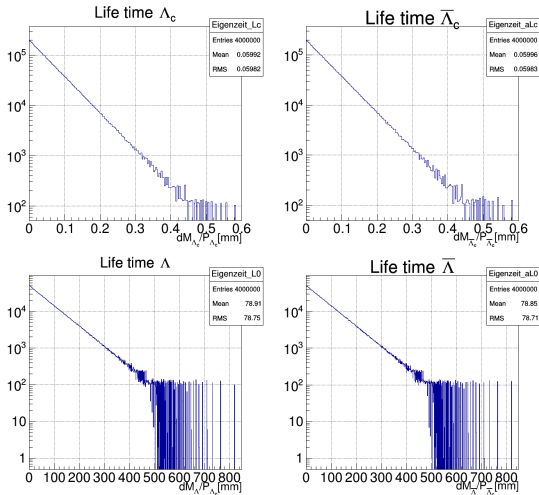
Figure : Lifetime of Λ_c and $\overline{\Lambda}_c$ (59.9 μm), and Λ_0 and $\overline{\Lambda}_0$ (78.9 mm)
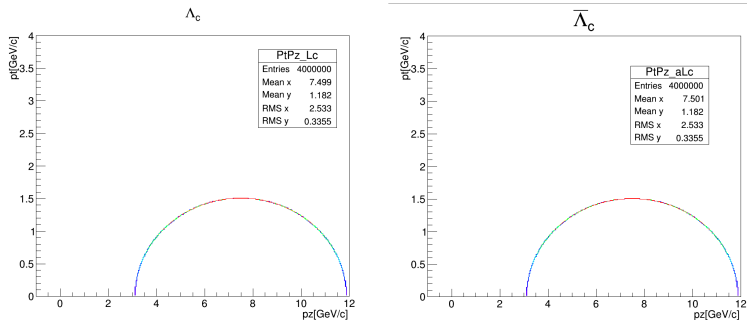
EvtGen 15 GeV/c

Figure : Transversal to longitudinal momenta of Λ_c and $\overline{\Lambda}_c$.
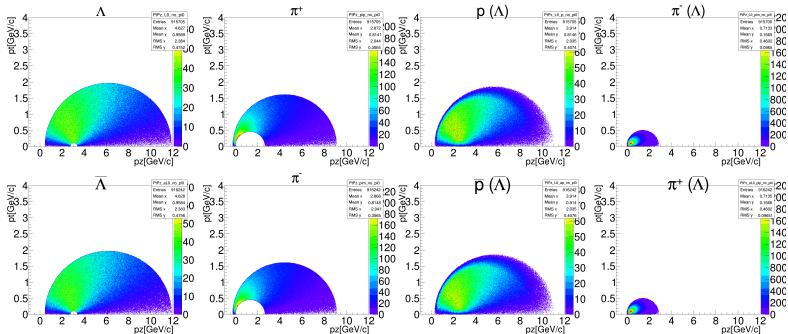
EvtGen 15 GeV/c

Figure : Transversal to Longitudinal momenta of the decay products.
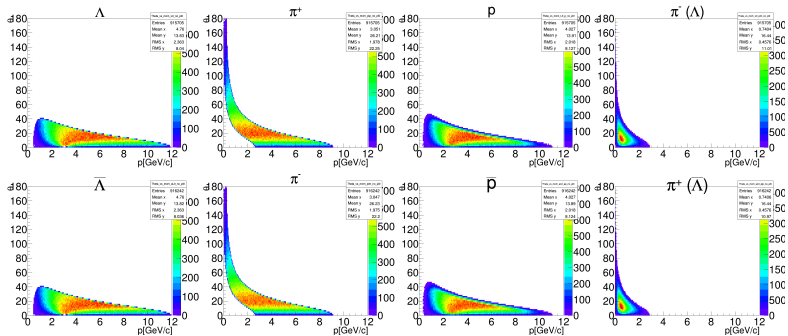
EvtGen 15 GeV/c

Figure : θ to momenta of the decay products.
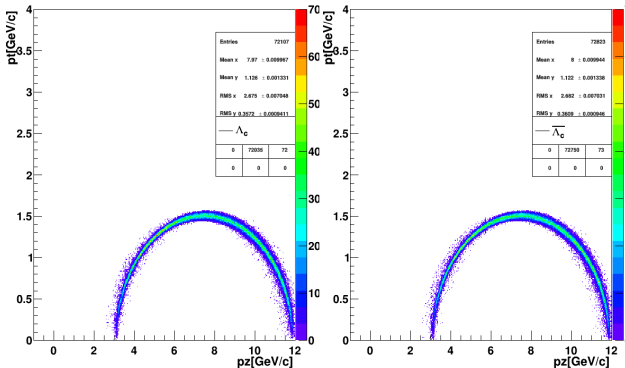
Reconstructed Events 15 GeV/c

Figure : Reconstructed transverse and longitudinal momenta of Λ_c and $\overline{\Lambda}_c$.
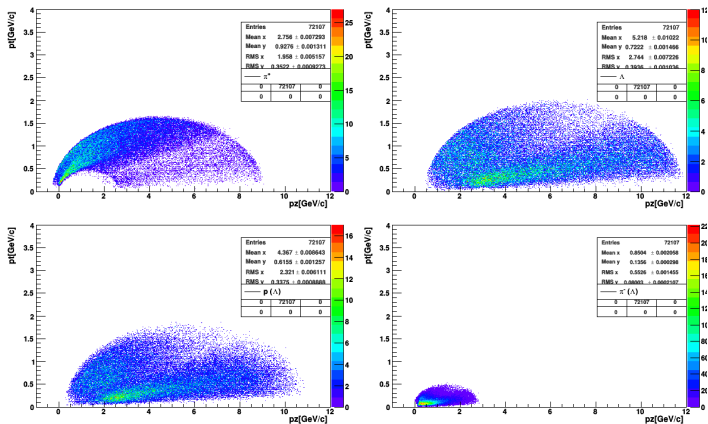
Reconstructed Events 15 GeV/c

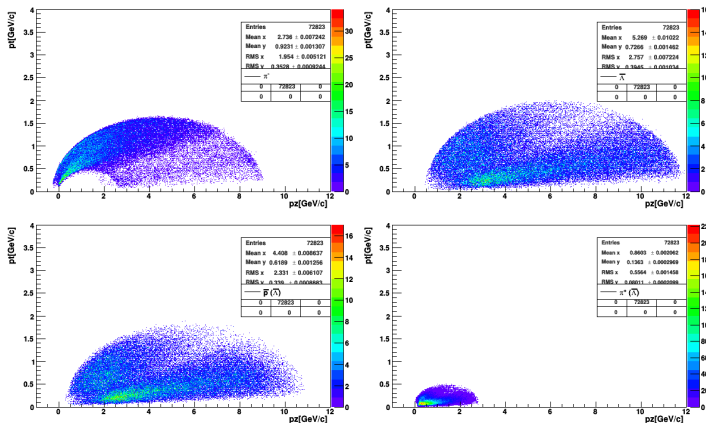Figure : Reconstructed transverse and longitudinal momenta of the decay products of Λ_c.

Figure : Reconstructed transverse and longitudinal momenta of the decay products of $\overline{\Lambda}_c$.
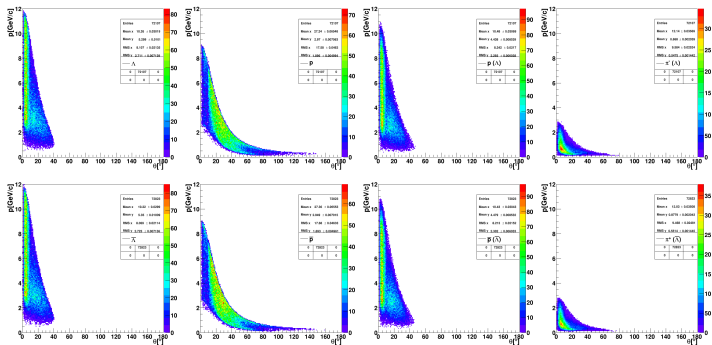
Reconstructed Events 15 GeV/c

Figure : Reconstructed θ to momenta of the decay products.
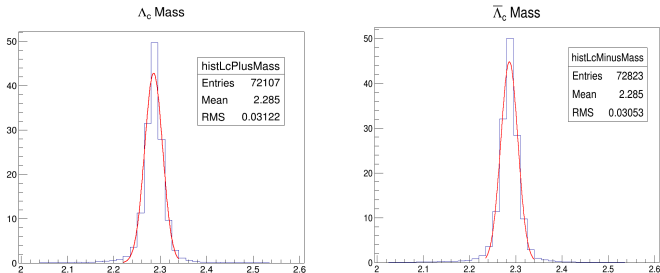
Reconstructed Events 15 GeV/c

Figure : Reconstructed mass of Λ_c and $\overline{\Lambda}_c$.
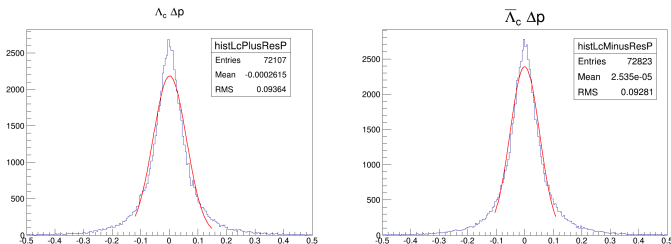
Reconstructed Events 15 GeV/c

Figure : Reconstructed momentum resolution of Λ_c and $\overline{\Lambda}_c$.

Reconstructed Events 15 GeV/c

- 800000 Events have been simulated
- 72107 Λ_c Candidates found, 71446 of them are MCmatched
- 72823 $\overline{\Lambda}_c$ Candidates found, 72158 of them are MCmatched
- 8839 Events found both Λ_c and $\overline{\Lambda}_c$, 8567 of them are MCmatched
- curerntly investigating 1.2 million DPM events

Used Cuts

- Cut on Pcm of Λ_c and $\overline{\Lambda}_c$
- Cut on Pocqa of Λ_c and $\overline{\Lambda}_c$
- Cut on Pocqa of Λ_0 and $\overline{\Lambda}_0$