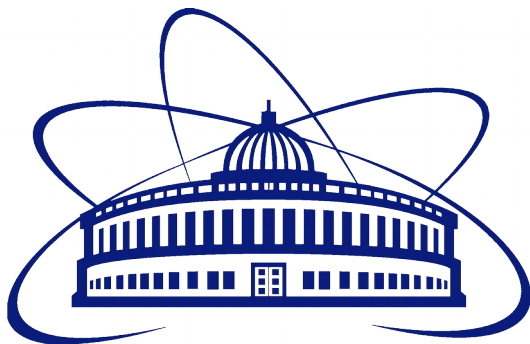# Progress on the study of global polarization
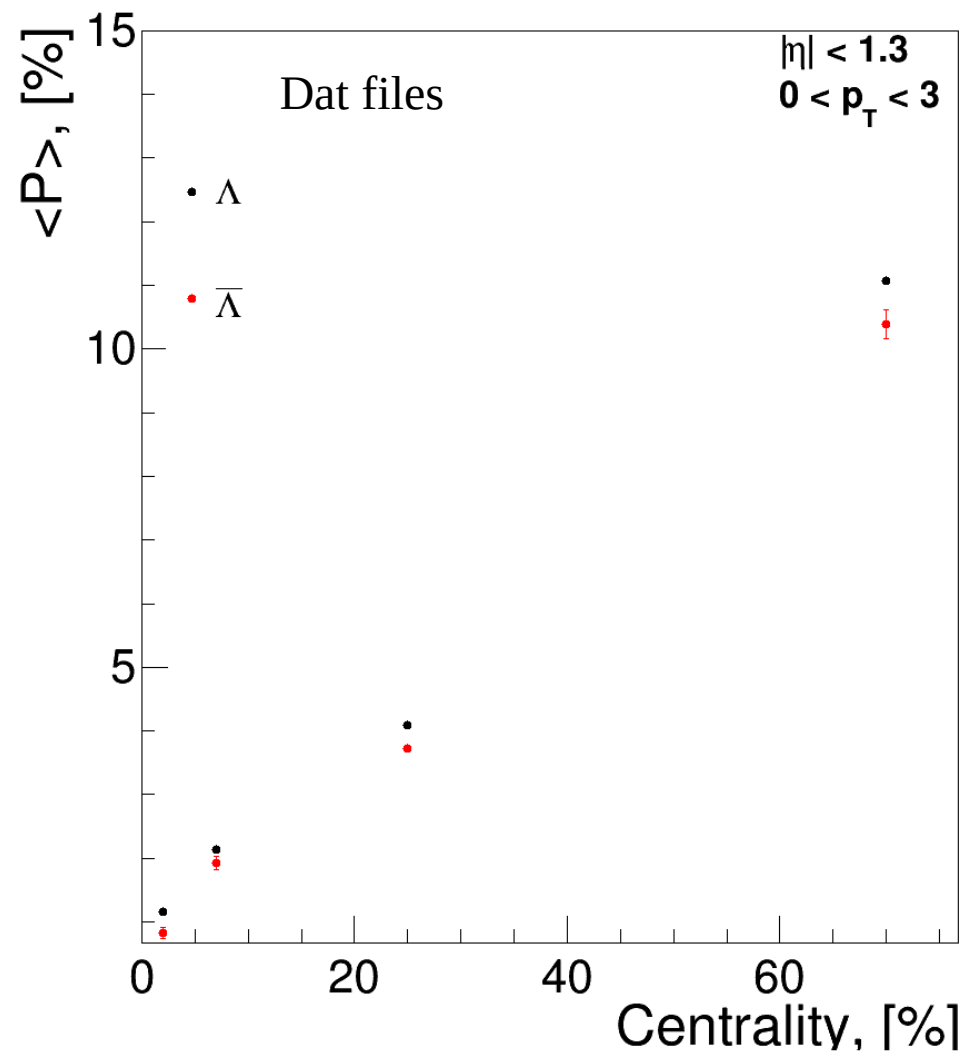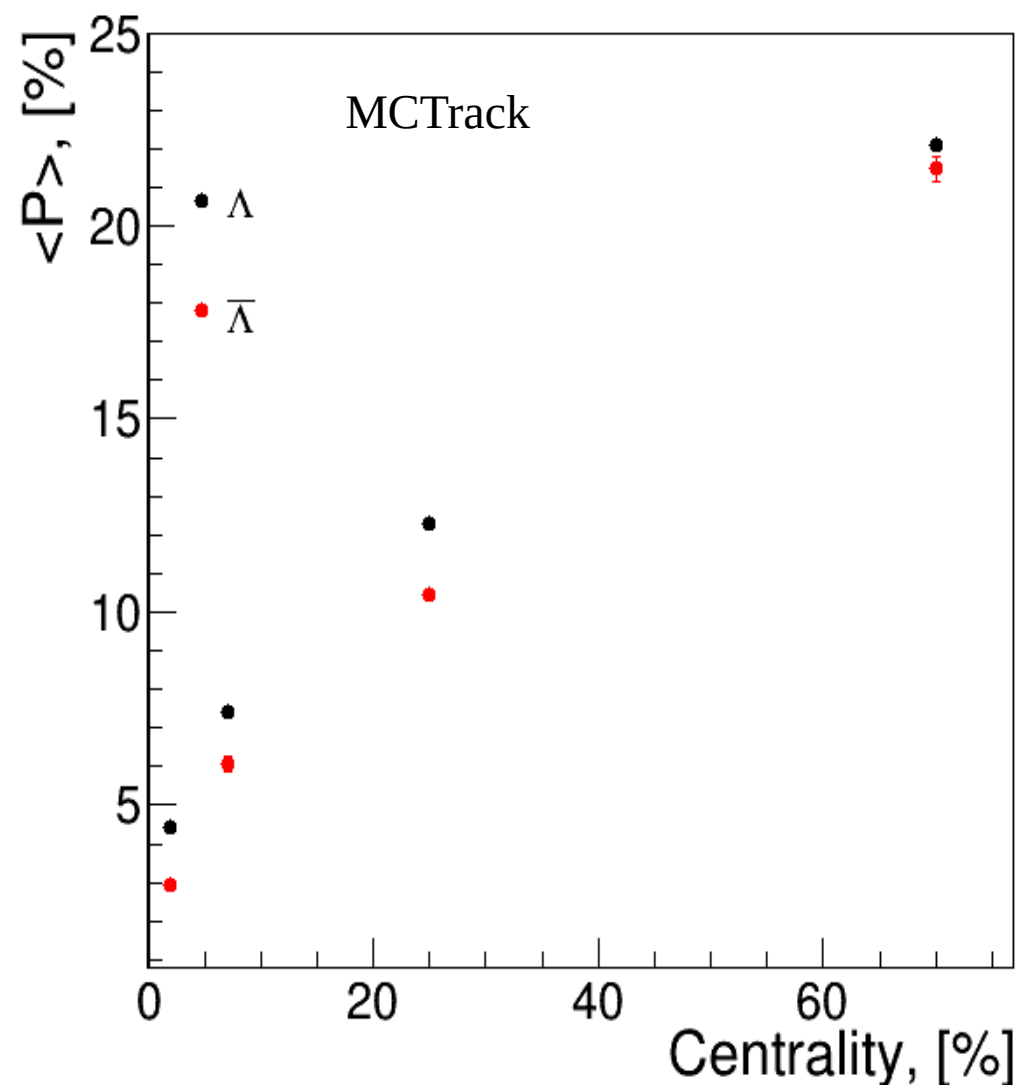
Elizaveta Nazarova[1]

MPD Polarization Meeting
«Vorticity and Polarization in Heavy-Ion Collisions»

30.03.2021

[1] Joint Institute of Nuclear Research, Dubna, Russia

➤ Mean values (- < P_y >) from MCTracks (left), from .dat files (right)

➤ <u>Incorrect transfer of polarization values to MCTracks!</u>
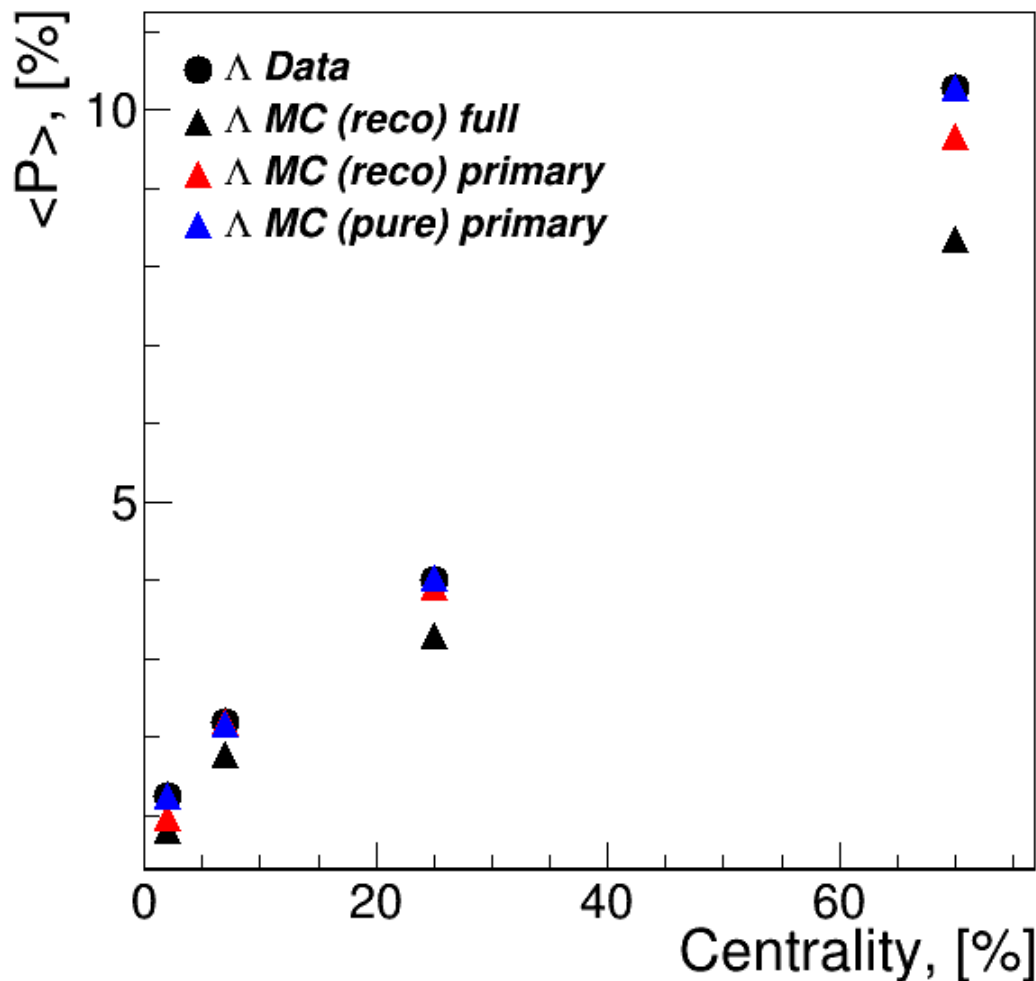
- <u>Data</u>: MC simulation using PHSD generator[1]

  - Au-Au, $\sqrt{s_{NN}} = 7.7$ GeV, ~1.5M MB events

  - Global $\Lambda(\bar{\Lambda})$ polarization

    - Thermodynamical (Becattini) approach[2]

- Track selection criteria for reconstruction:

  - Number of TPC hits: $N_{hits} > 10$

  - $|\eta| < 1.3$

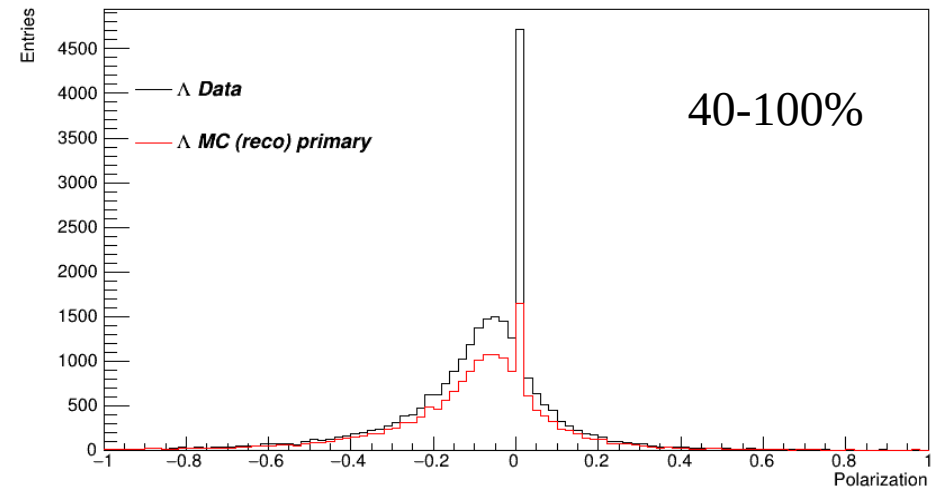- Testing new transfer of polarization values from Data to MC

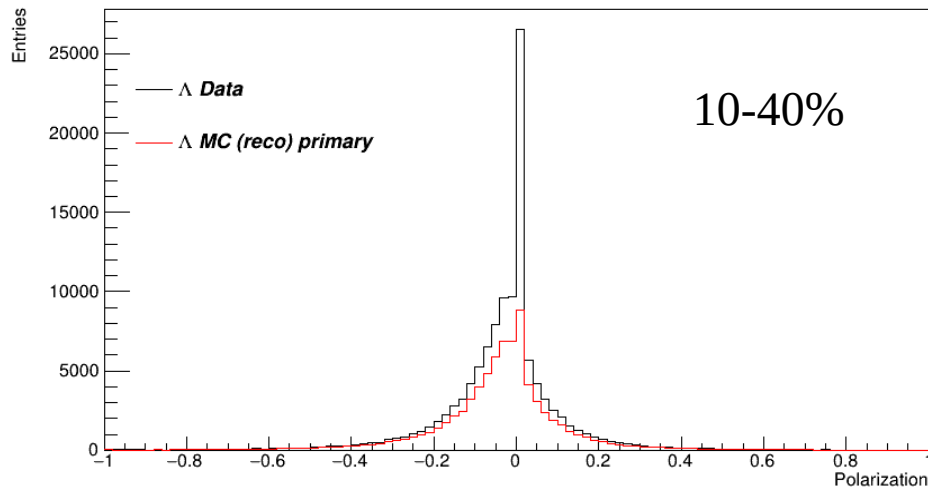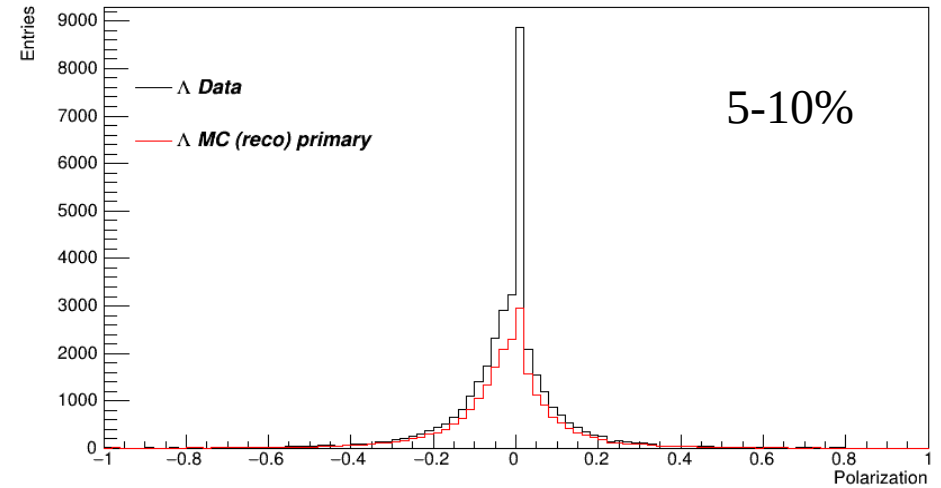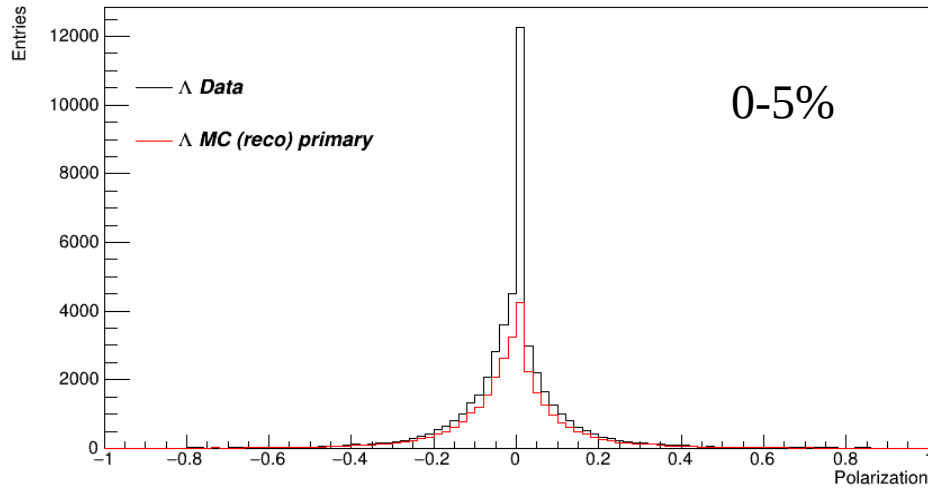 - Subset of data (~ 365000 events)

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[1] W. Cassing, E. Bratkovskaya, PRC 78 (2008) 034919; NPA831 (2009) 215; W. Cassing, EPJ ST 168 (2009) 3
[2] F. Becattini, V. Chandra, L. Del Zanna, E. Grossi, Ann. Phys. 338 (2013) 32

- Mean global Polarization for Λ ($P_J = -P_y$)

- Centrality calculated wrt impact parameter

- Comparison between Data, MC, MC tracks associated with reconstructed Λ (full and primary)

➢ Correct transfer of polarization values from Data to MC
➢ Slight difference wrt MC tracks associated with RECO Lambda
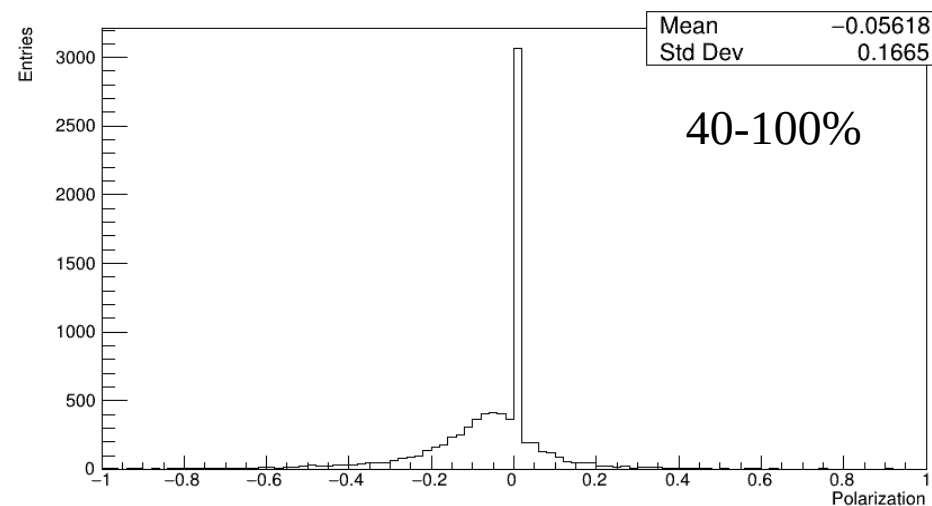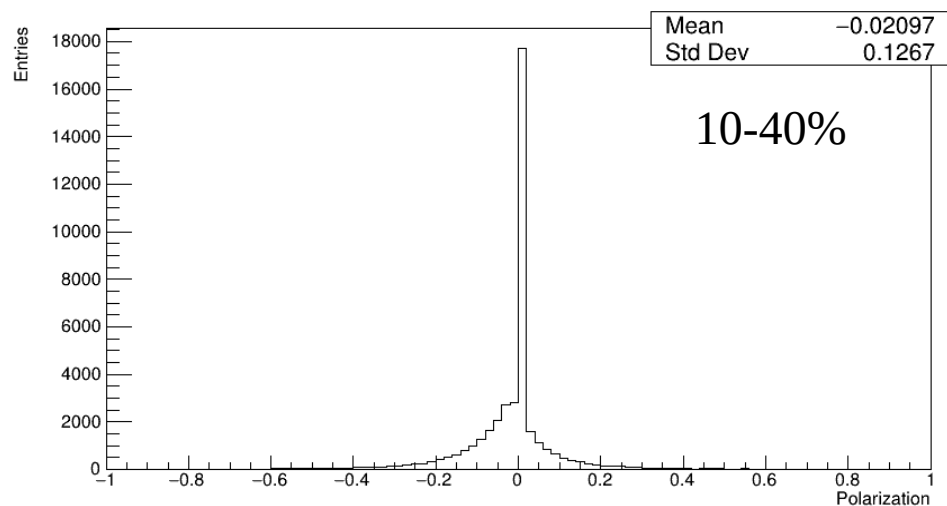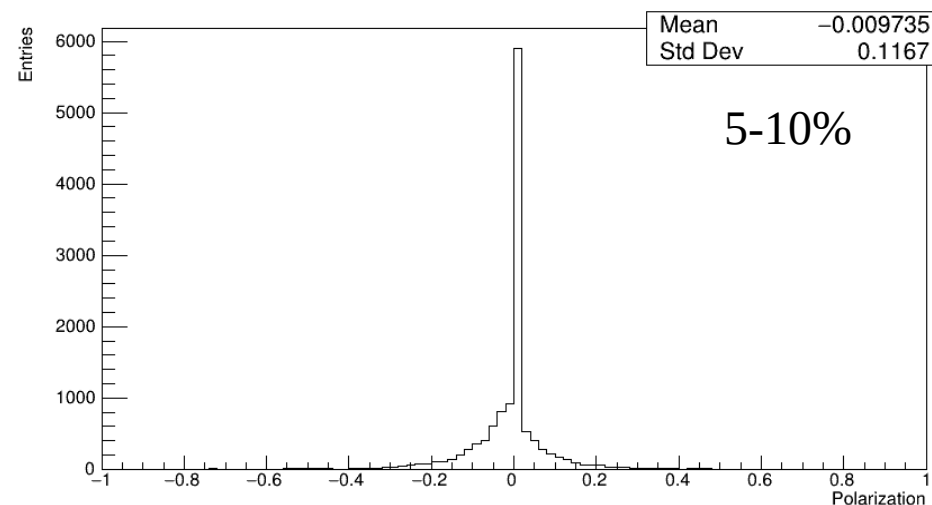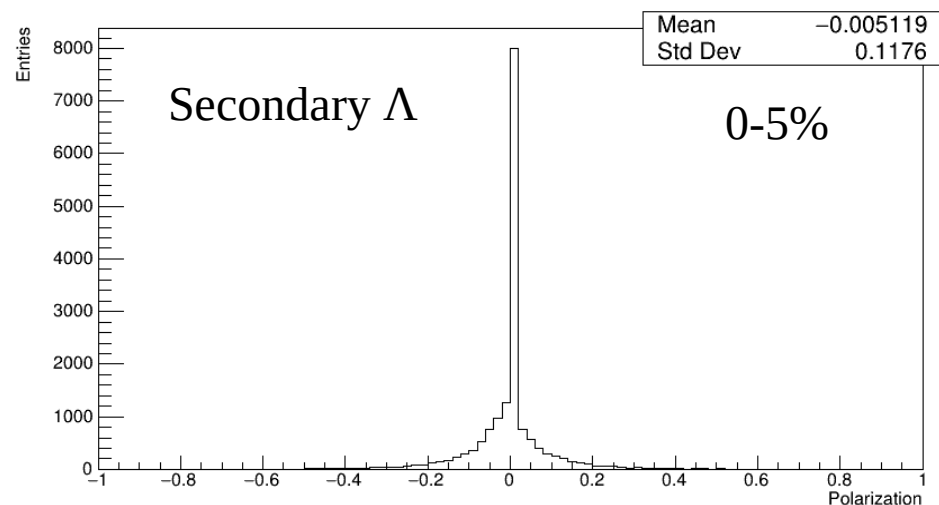➢ Secondary Λ decrease the value

Distributions of P_y for Lambda, - < P_y > corresponds to mean global polarization.

- ## Progress update
  - Fixed the issue with polarization transfer (Data $\rightarrow$ MCTracks)
- ## Outlook
  - Re-run the entire dataset with the updated transfer
  - Global polarization reconstruction
  - Polarization transfer to secondary lambda

Thank you for your attention!

Results

Distributions of P_y for Lambda, - < P_y > corresponds to mean global polarization.