Enhancing Geant4 Monte Carlo Simulations through Machine Learning Integration
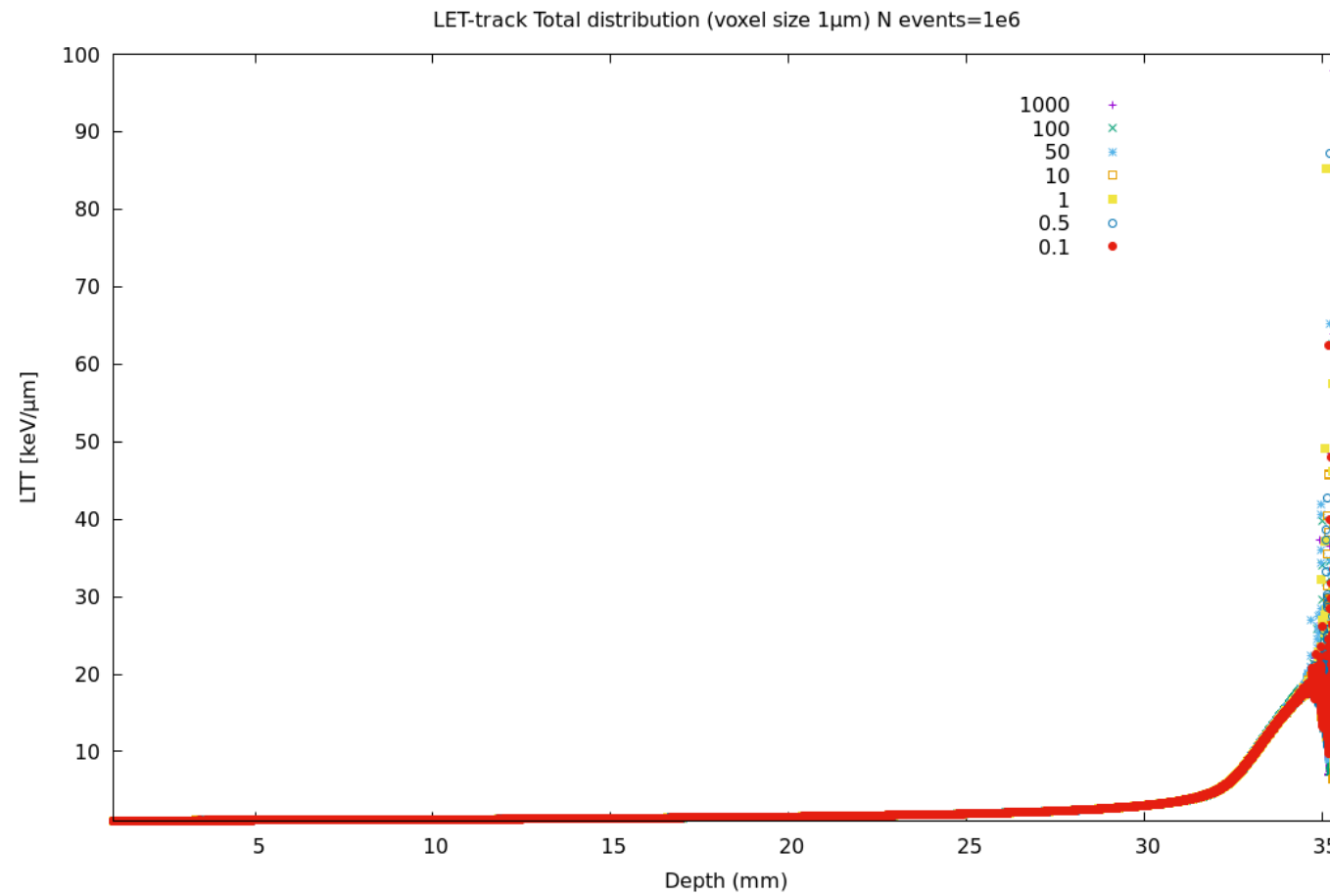
Spoke 2 - WP6

G.A.P Cirrone, A. Tricomi, S.Fattori, A. Sciuto, G. Gallo, V. Ientile
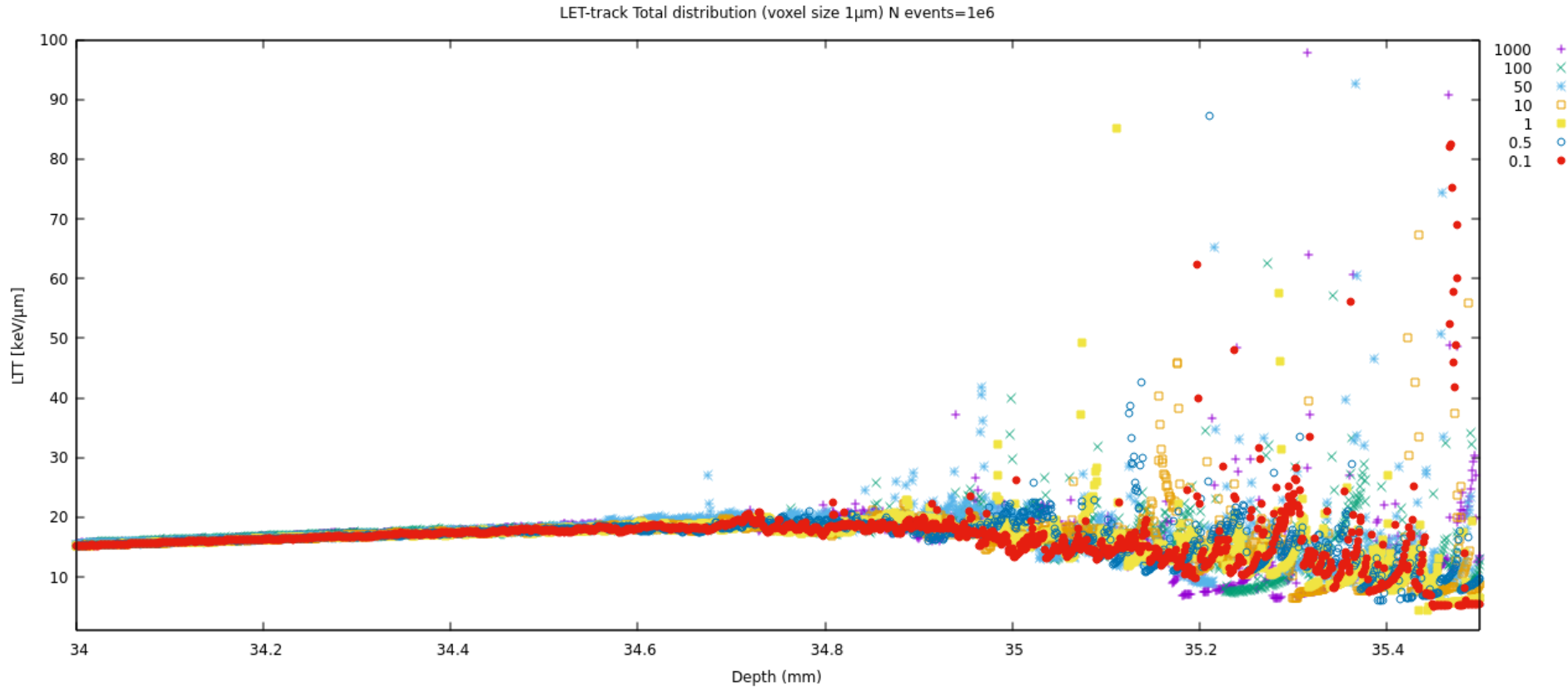
23 Aprile 2024

Hadrontherapy G4 Simulations: Exploratory Analysis

- Evaluation of minimum number of events
- Investigating cut independence

➢ Estimation of Percentage Error
➢ Statistical significance of the results

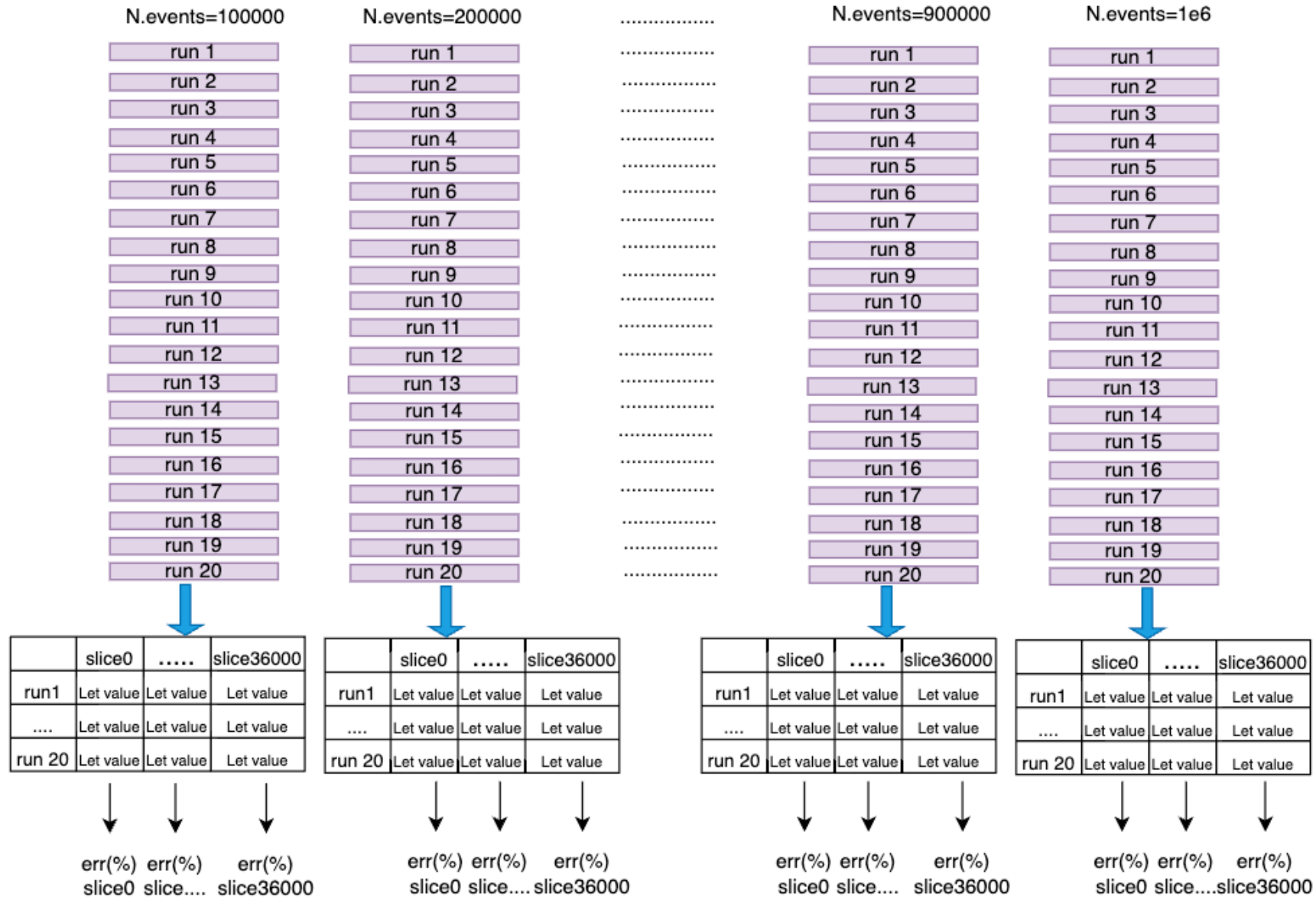# Hadrontherapy G4 Simulations: Exploratory Analysis

LET-track Total distribution (voxel size 1μm) N events=1e6

Hadrontherapy G4 Simulations: Exploratory Analysis (2)

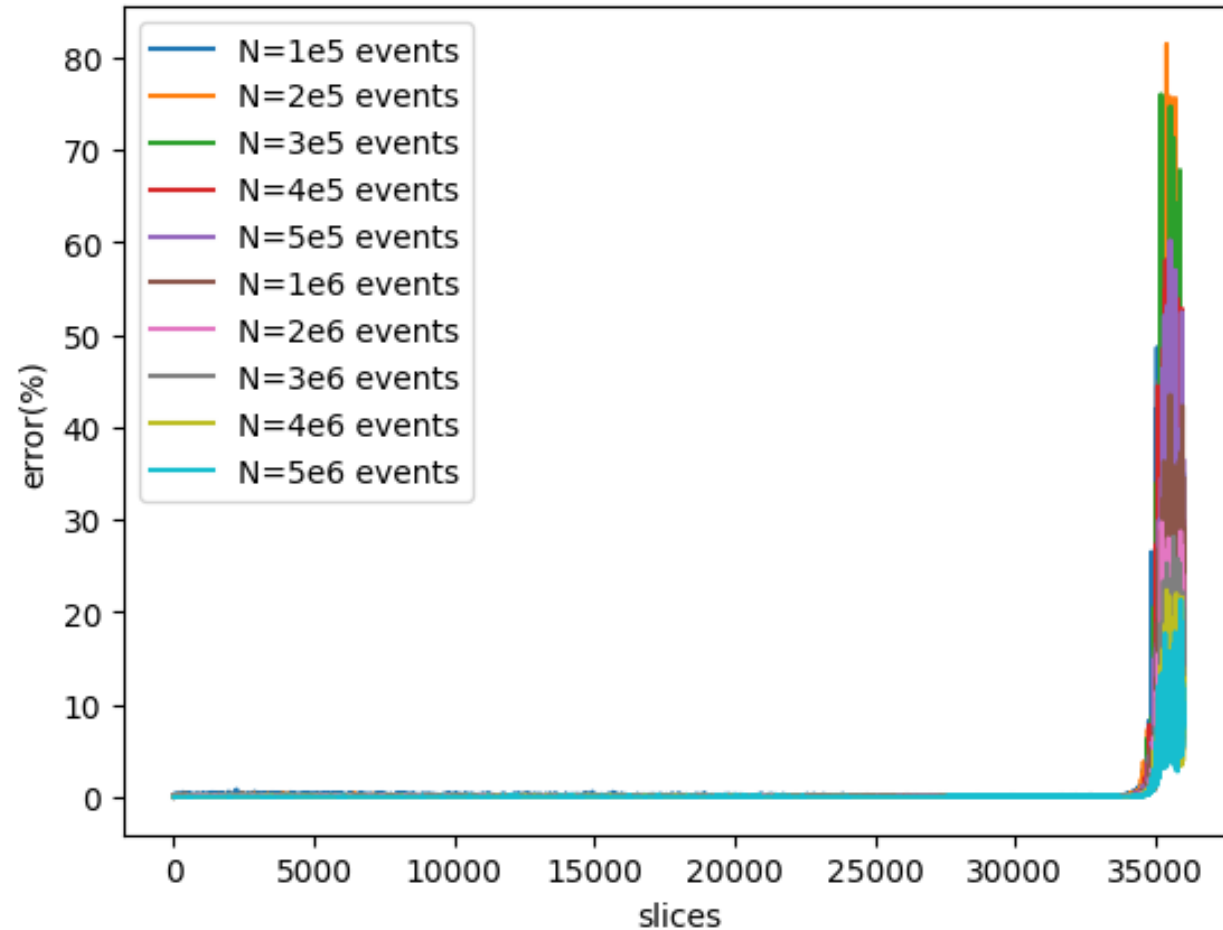LET-track Total distribution (voxel size 1µm) N events=1e6

Evaluation of minimum number of events and estimation of percentage error
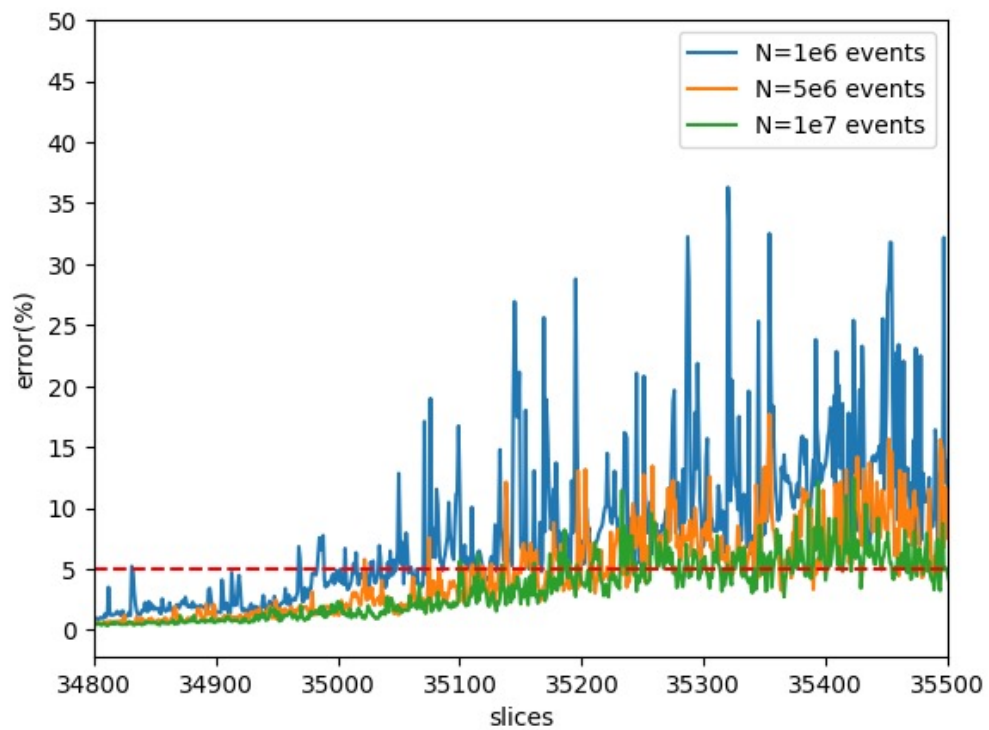
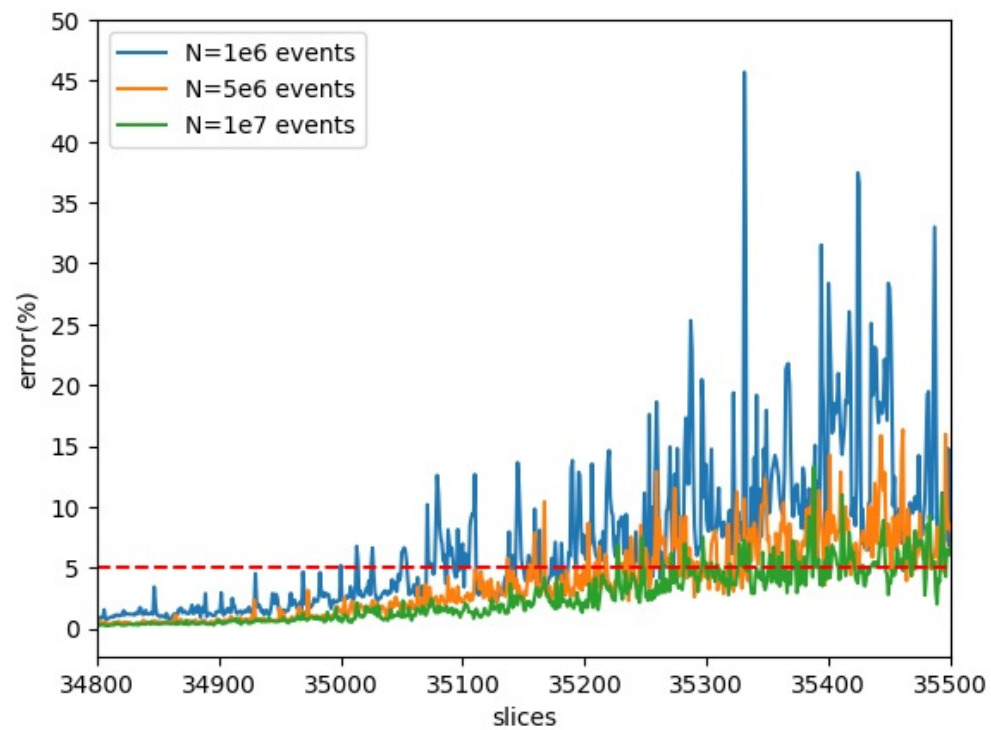**cut=1000 um,
0.5 um
vsize= 1um**

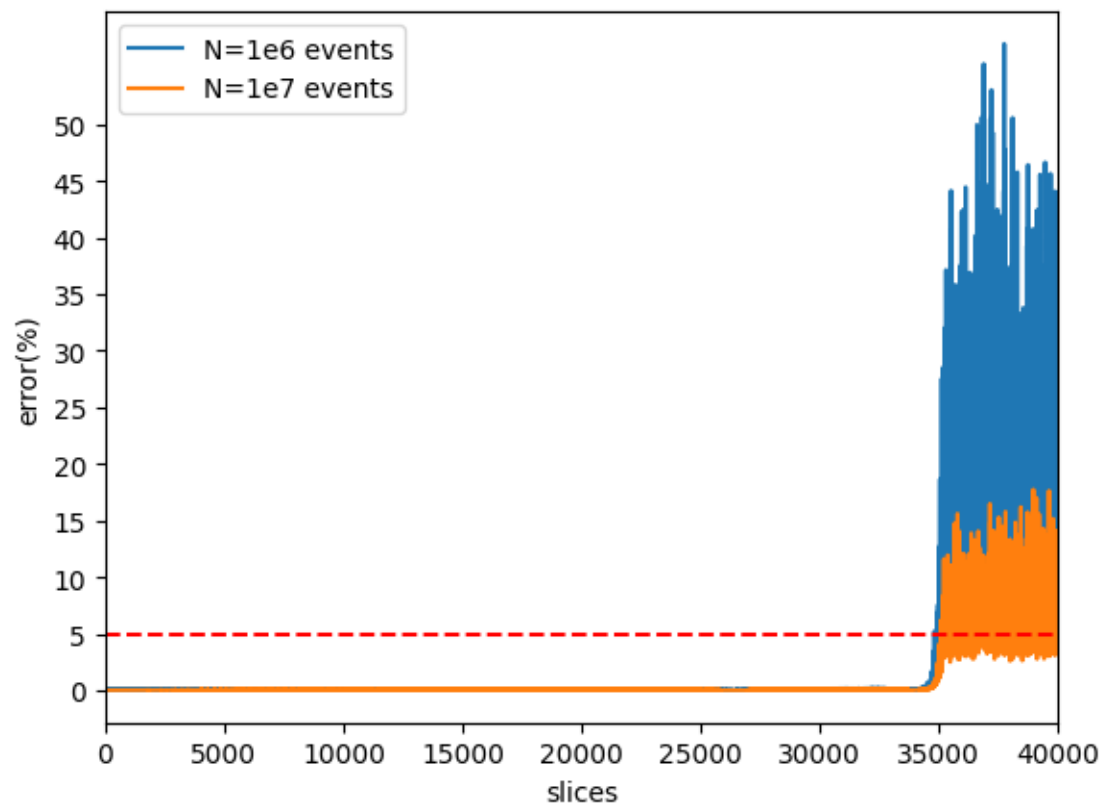# Error(%) distribution per slice (cut 1000 um)

Error(%) LET distribution per slice (cut 1000 um)

Error(%) LET distribution per slice (cut 0.5 um)

Error(%) distribution per slice (cut 1000 um)

Error(%) distribution per slice (cut 0.5 um)