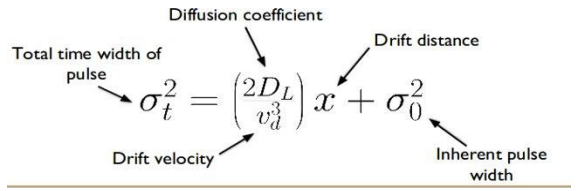
# Update on diffusion studies

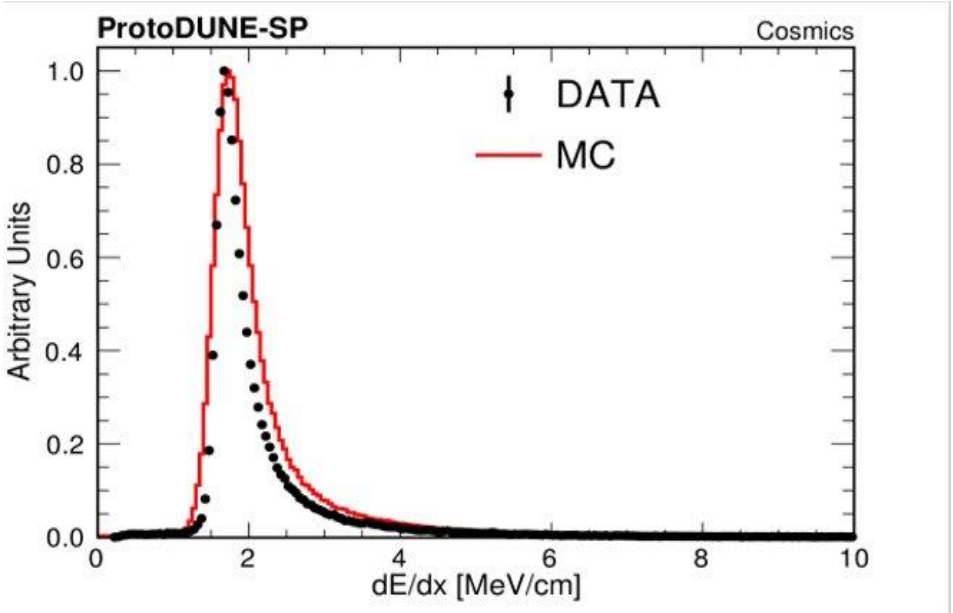
Ajib Paudel

*Recap:*

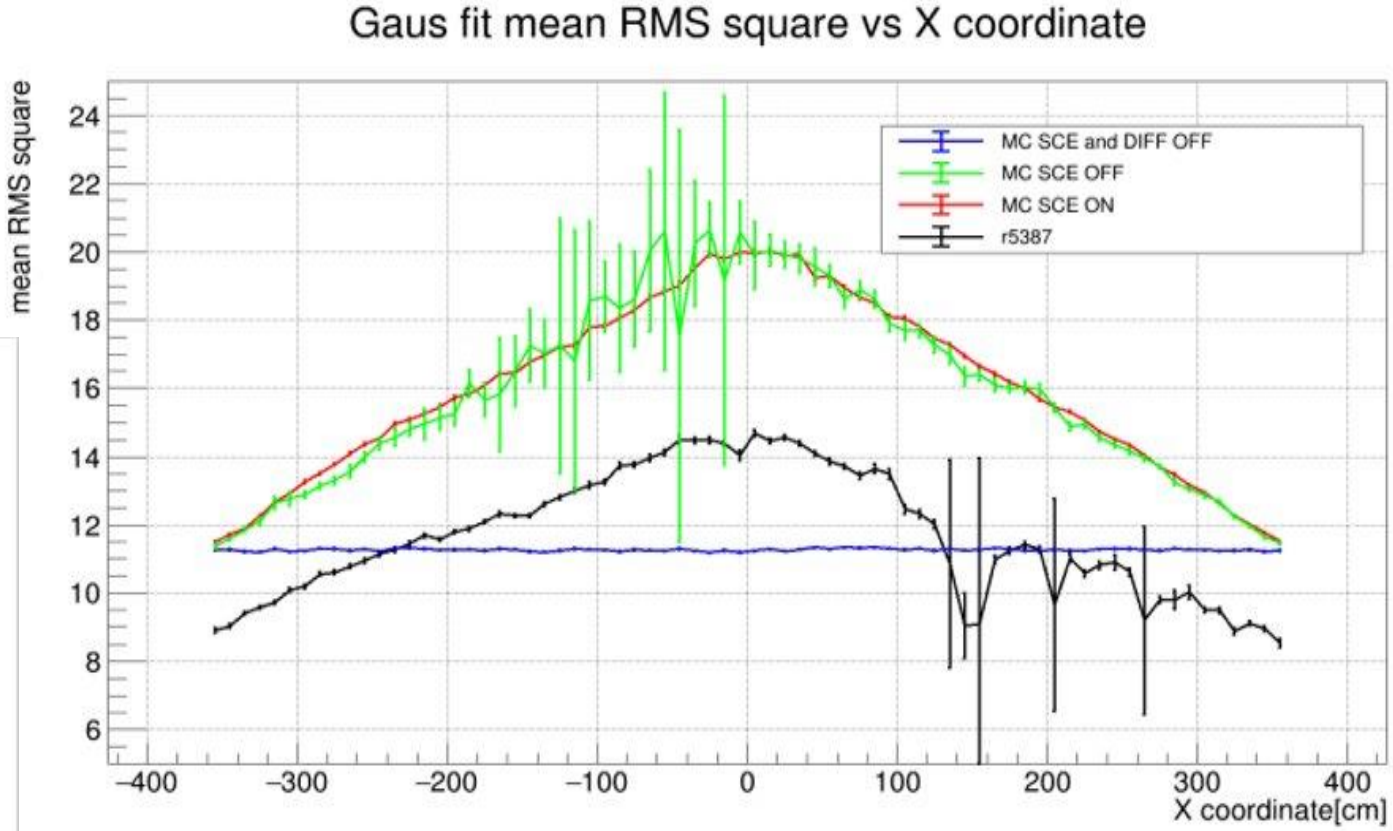
https://indico.fnal.gov/event/22125/contribution/2/material/slides/0.pdf

We tried to estimate the diffusion constants fitting sigma_t square vs drift distance(x) for different samples and data:




Width of dE/dx for data and MC doesn't agree

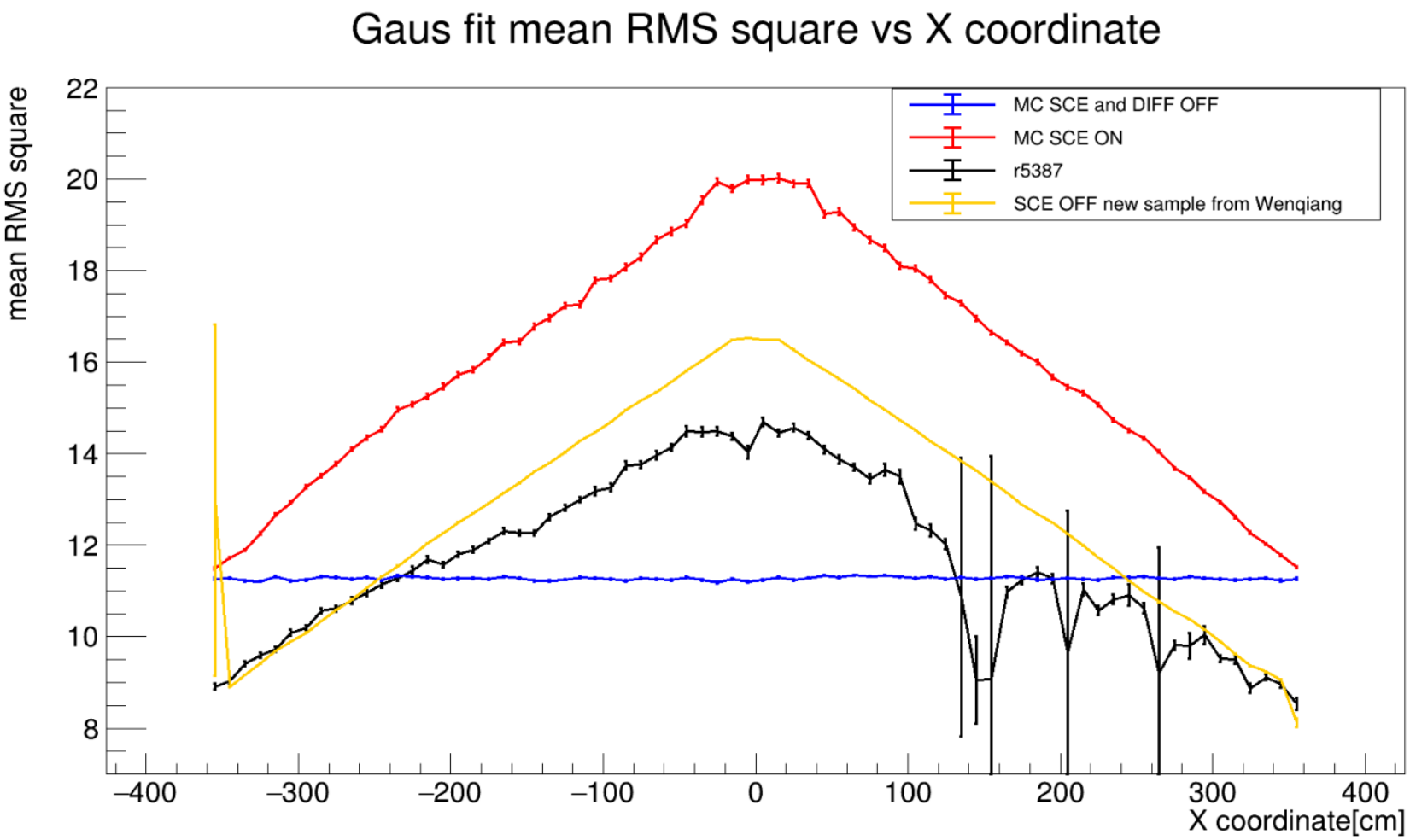



We found the inherent pulse width of data and Monte-Carlo doesn't agree.

Updates:

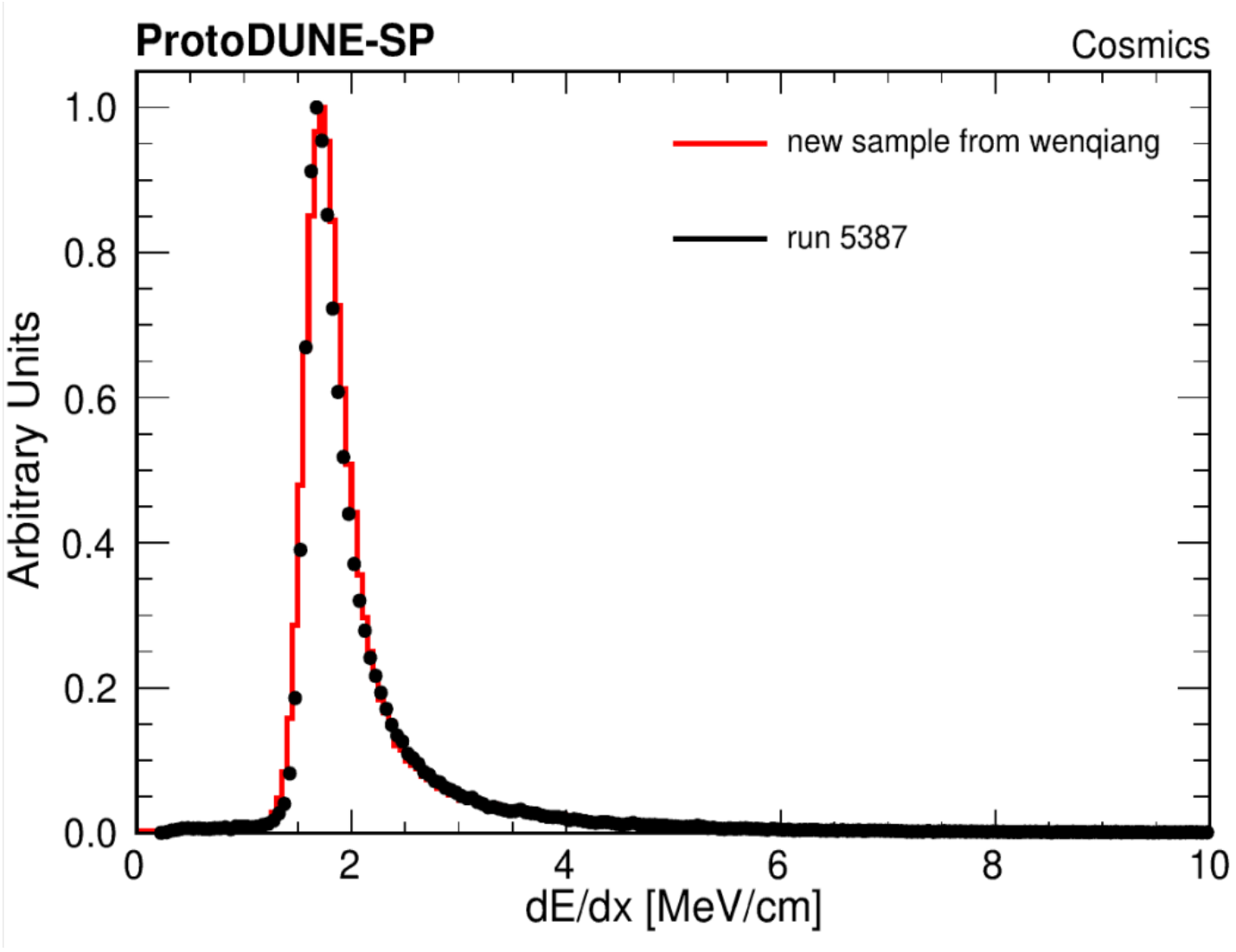
Wenqiang generated some new Monte-Carlo sample.

I made a similar sigma_t square vs X coordinate plot for the new sample,




We can see the inherent term in the plot for new sample agrees well with data.

I made dE/dx plot for the new MC sample:




The new MC sample dE/dx and data dE/dx width are in close agreement.