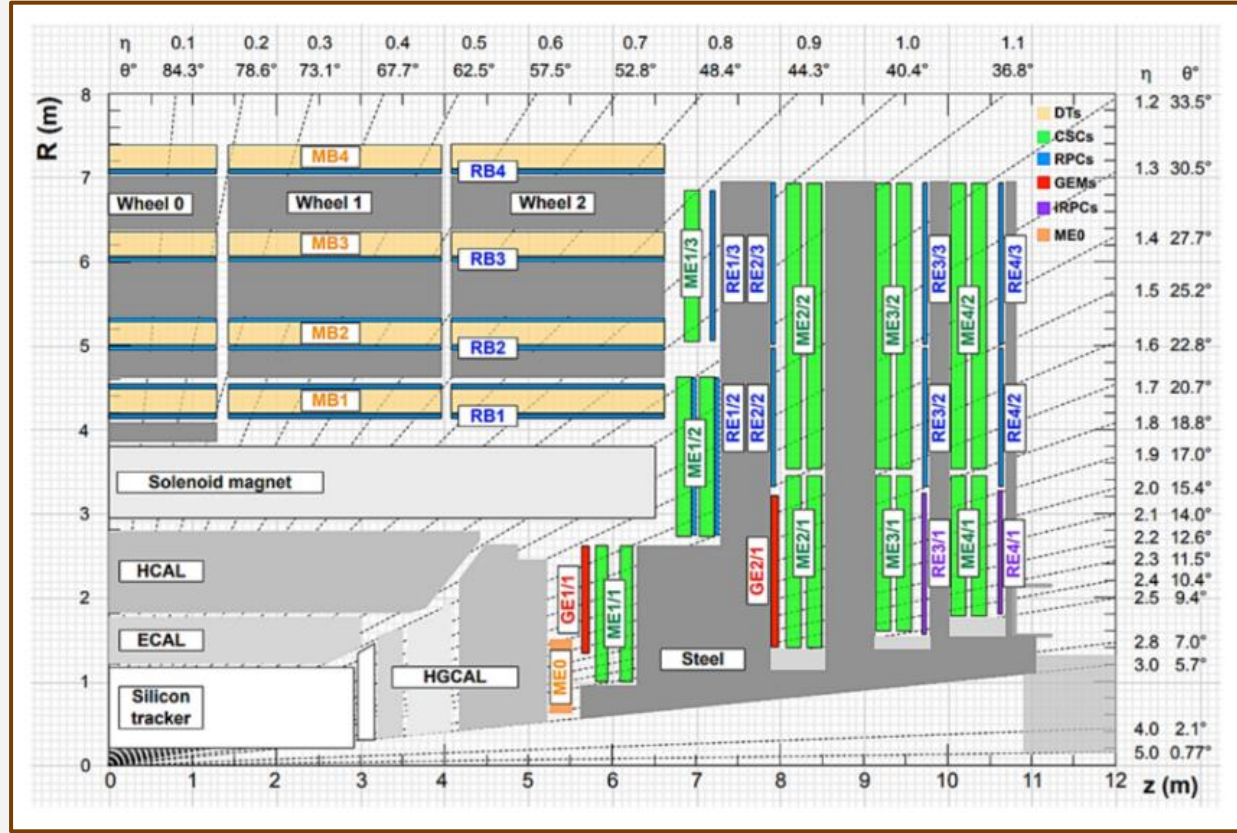


Performance of Triple-GEM Detectors for the ME0 Station Measured in Test Beam

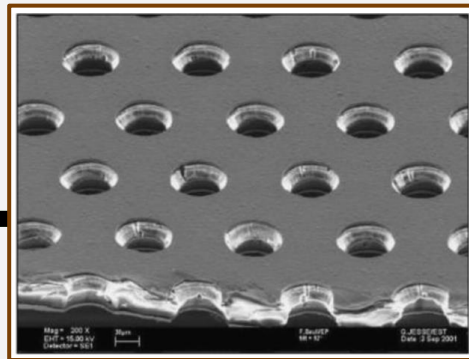
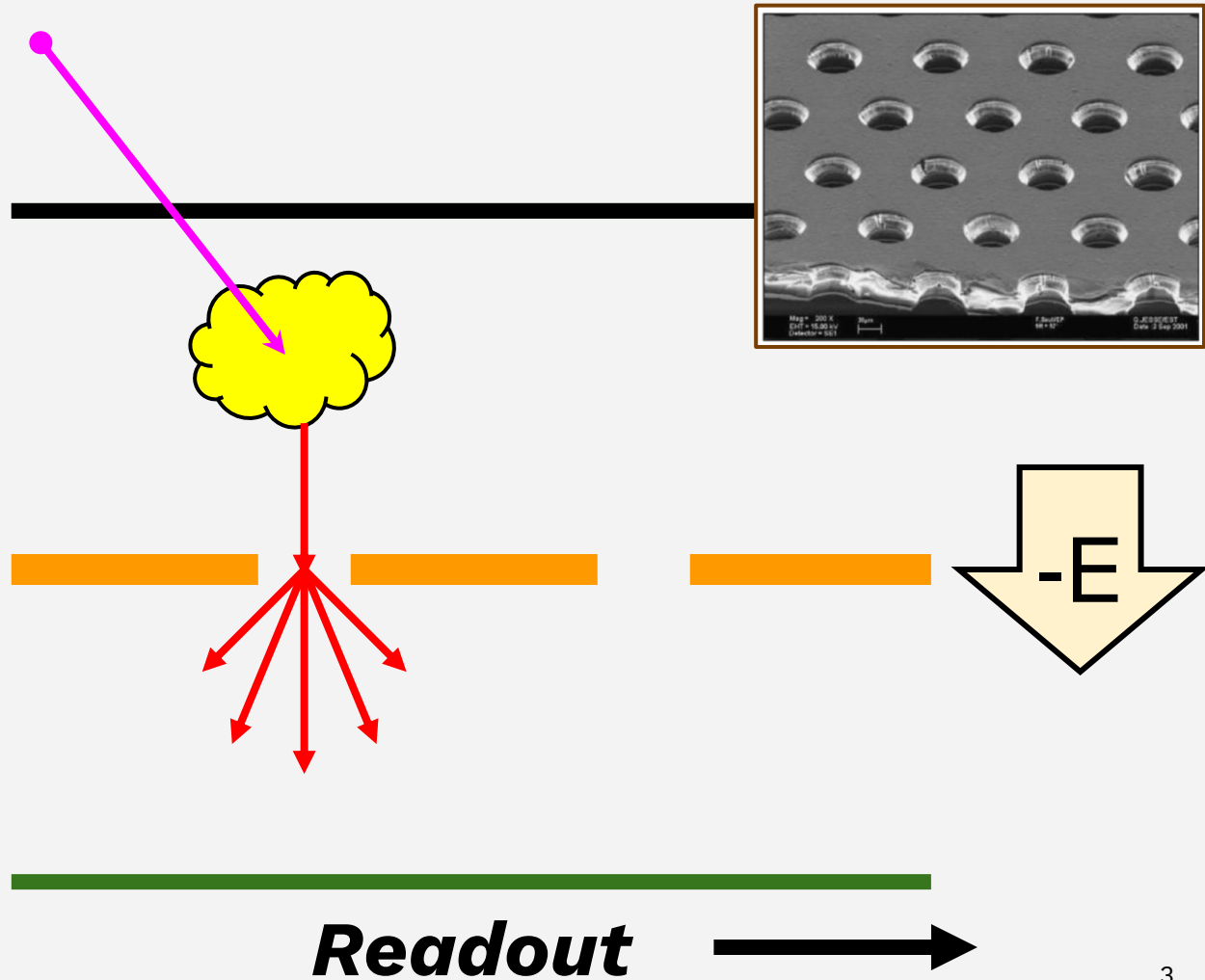
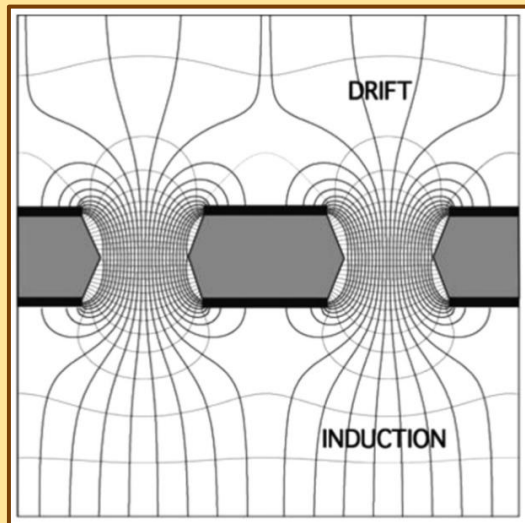


Nicholas Kurth
Antonello Pellecchia, Ph.D.
Final Presentation

GEMs & CMS

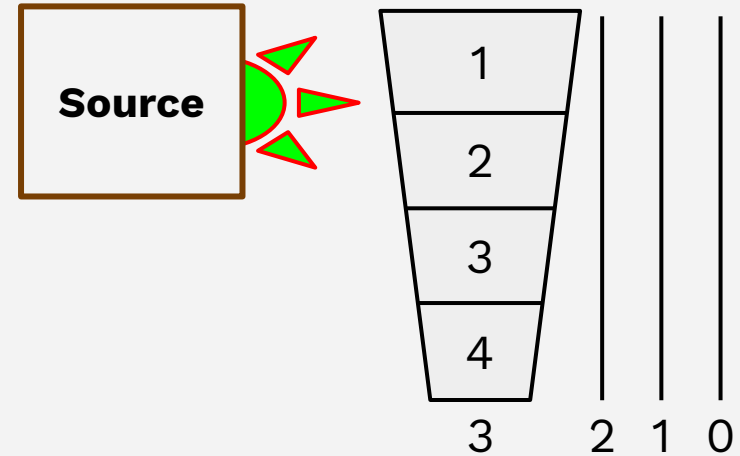
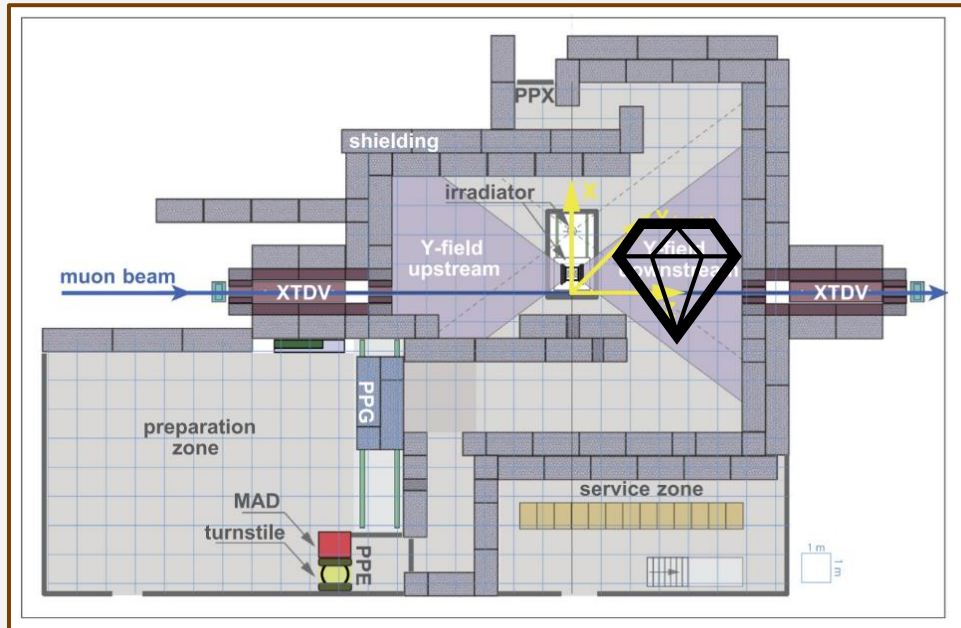


GEM Basics



Research Project

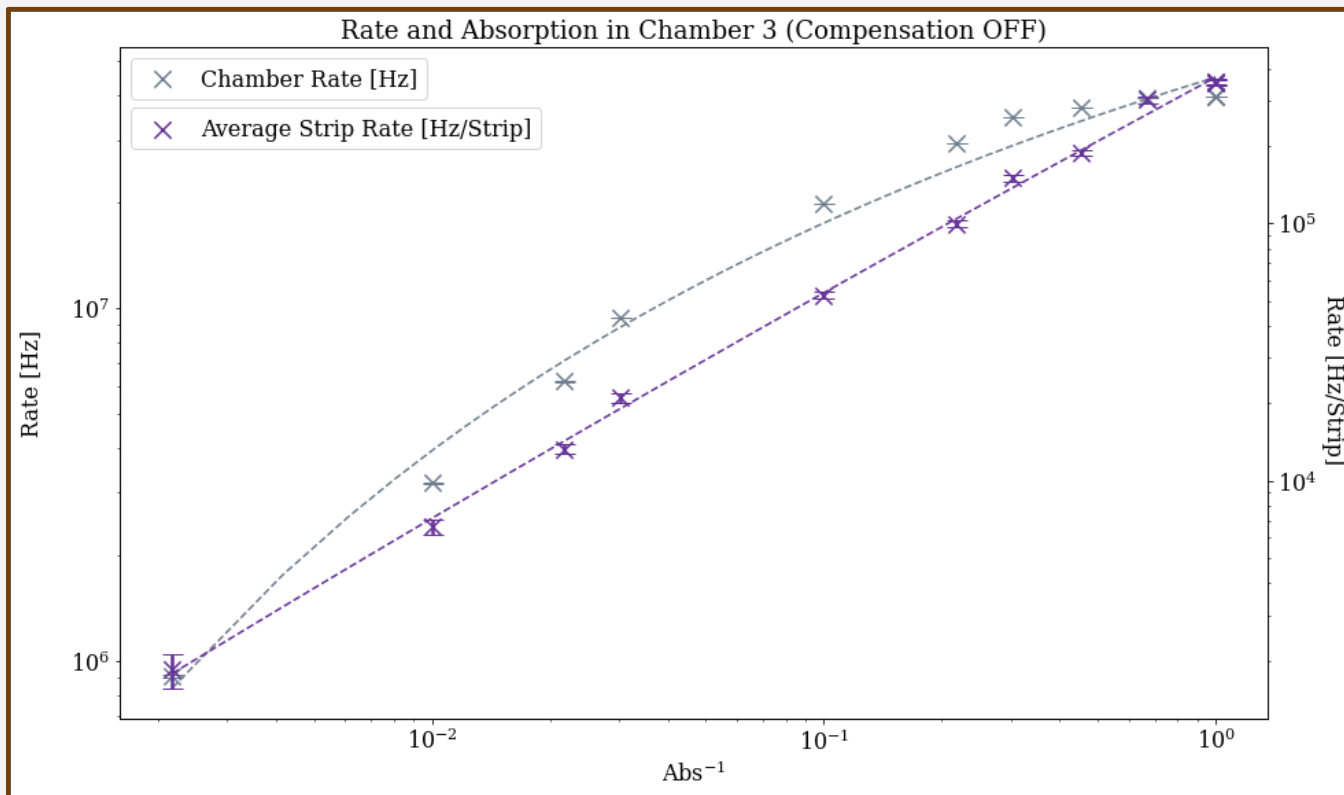
Evaluate the performance of triple-GEM detectors within the GIF++ test beam, including rate, spatial resolution,



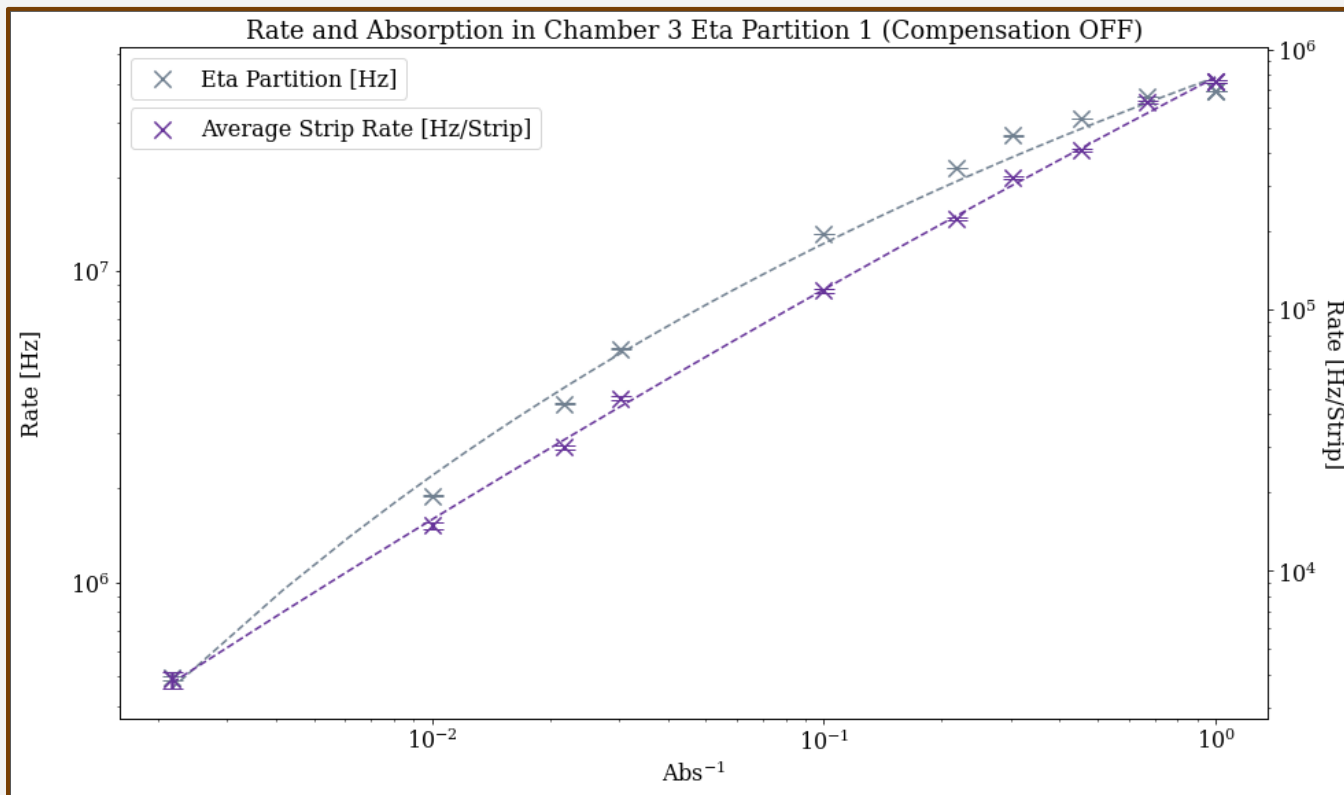
Results — Rate per Chamber, Eta, & Strip



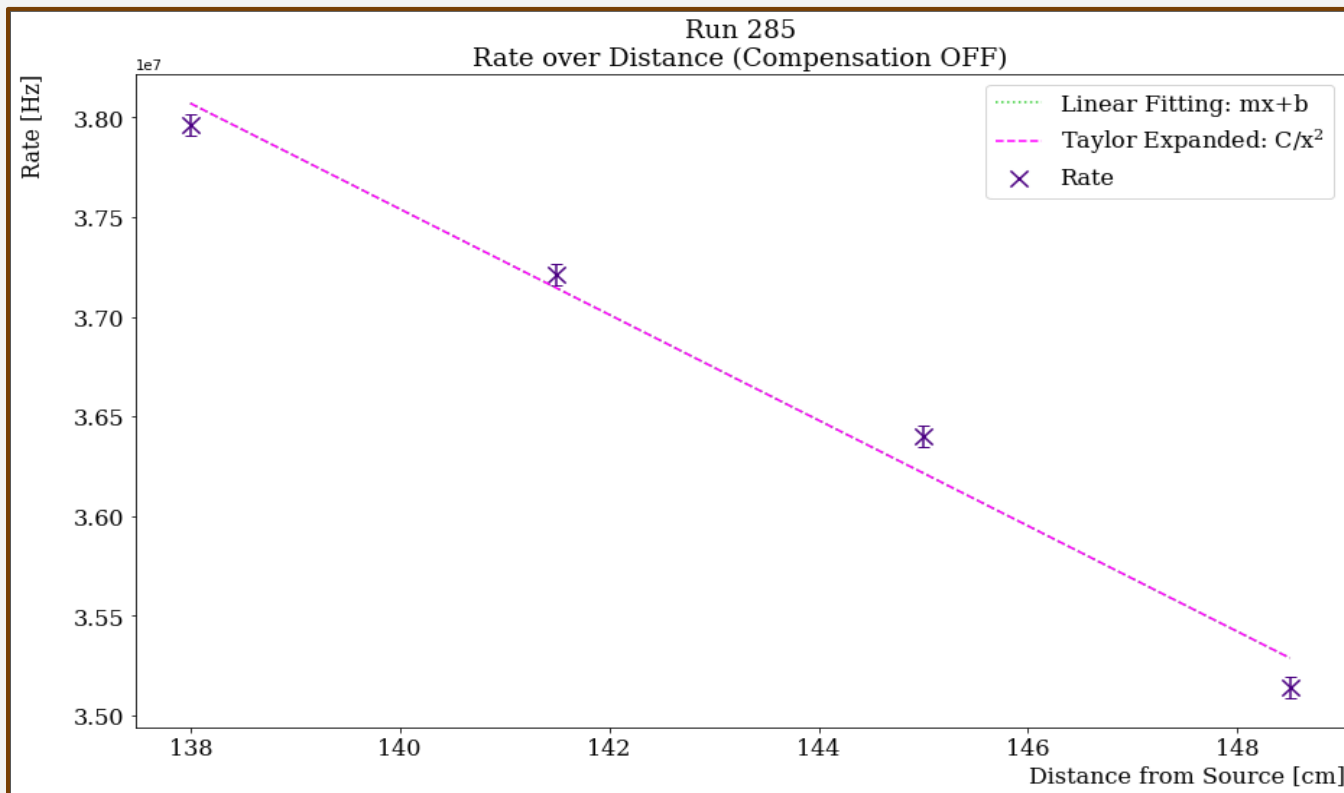
Results — Rate vs. Attenuation



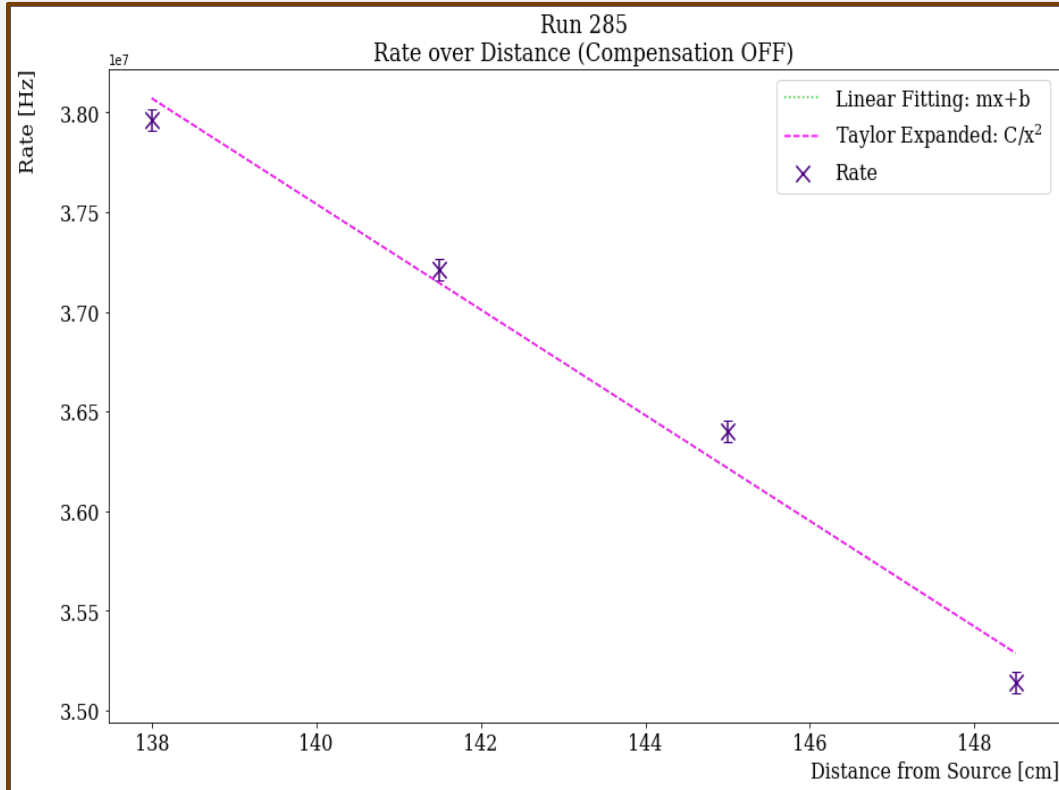
Results — Rate vs. Attenuation



Results — Rate vs. Distance



Results — Rate vs. Distance

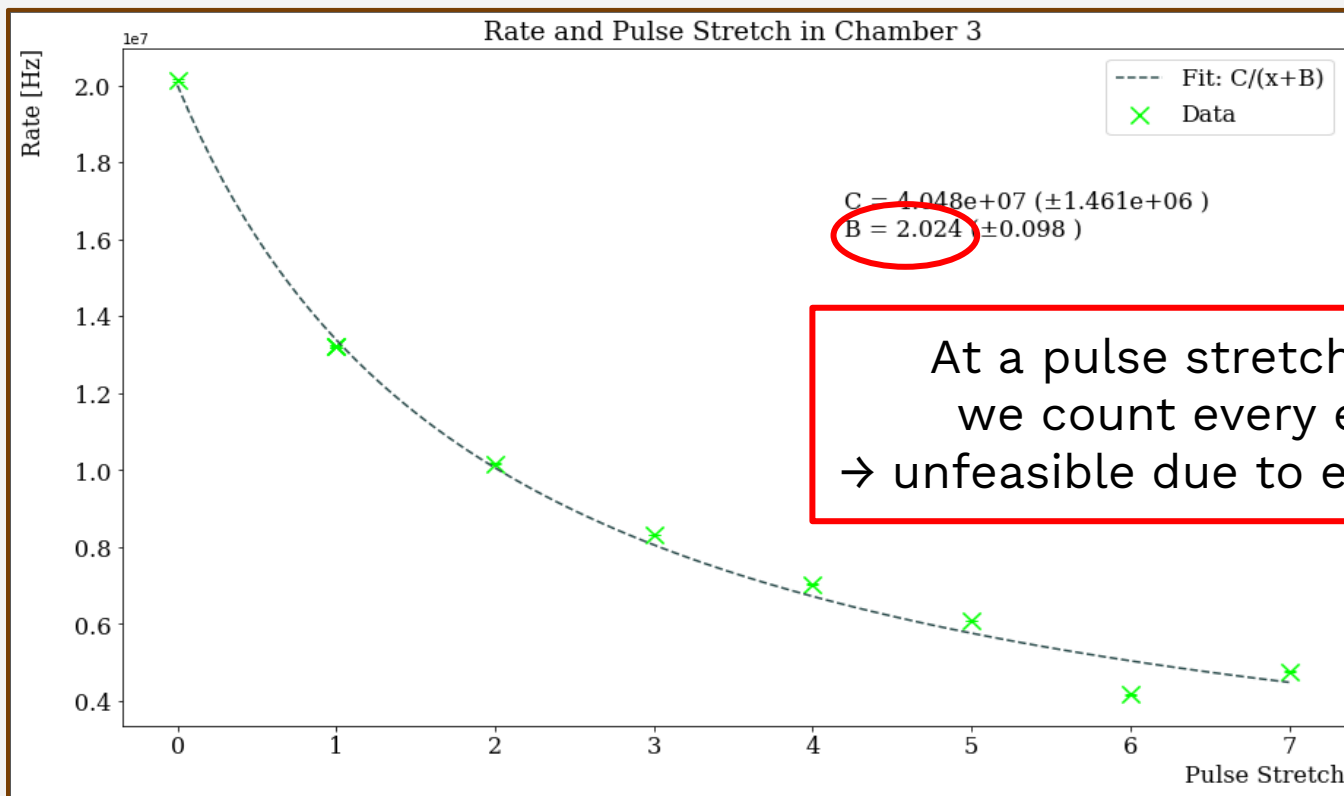


$$\frac{C}{x^2}$$

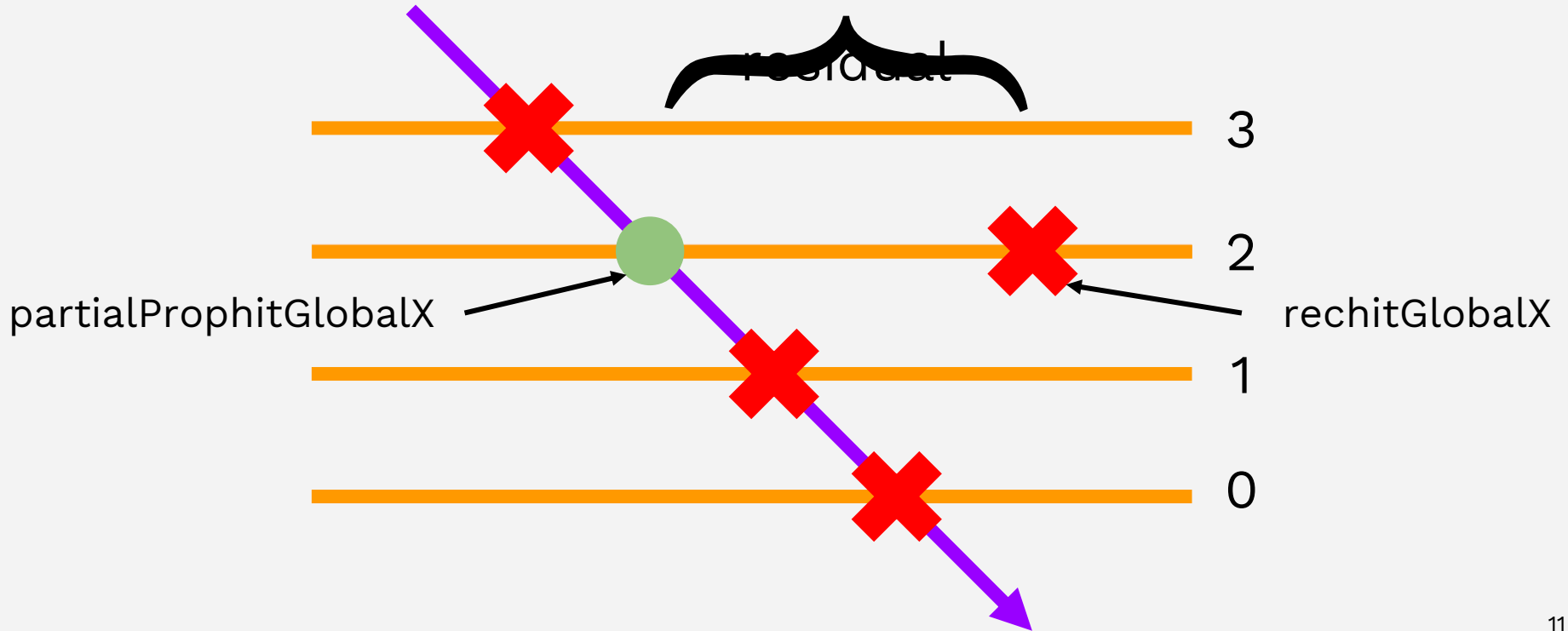
When Taylor Expanded
around b
($b \gg 0$)

$$\frac{C}{b^2} - \frac{2C(x-b)}{b^3} + \frac{3C(x-b)^2}{b^4} - \frac{4C(x-b)^3}{b^5} + \dots$$

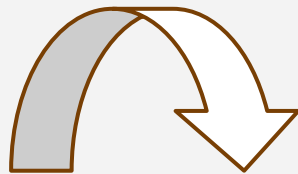
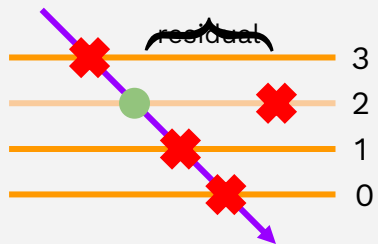
Results — Rate vs. Pulse Stretch



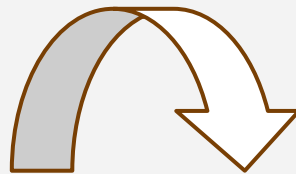
rechitGlobalX vs. partialProphitGlobalX



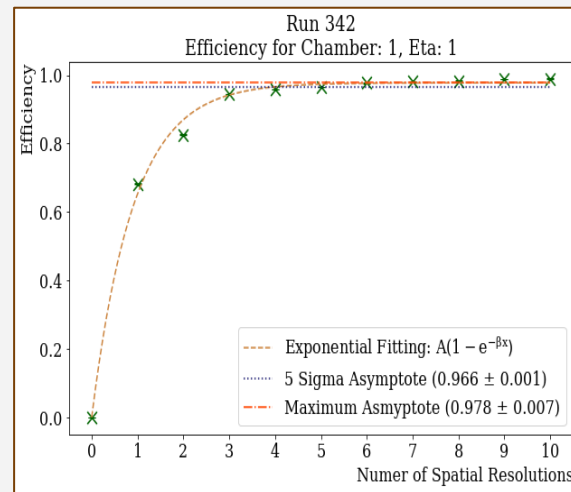
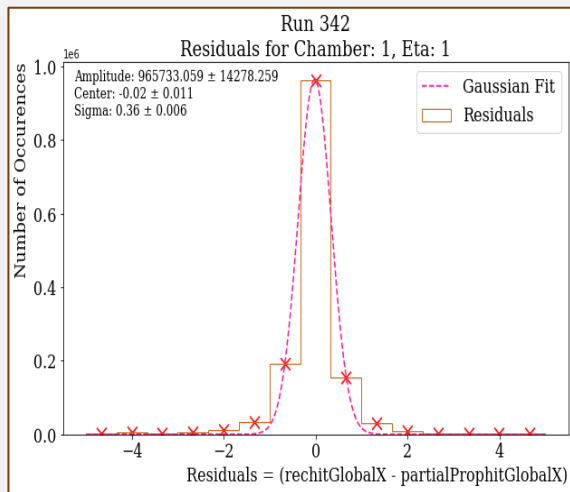
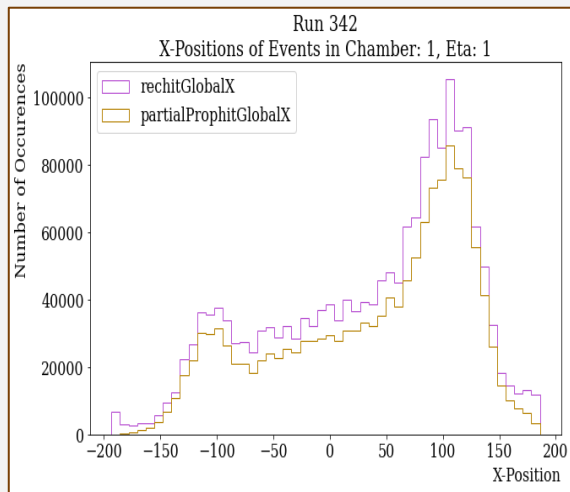
Results — Spatial Resolution & Efficiency



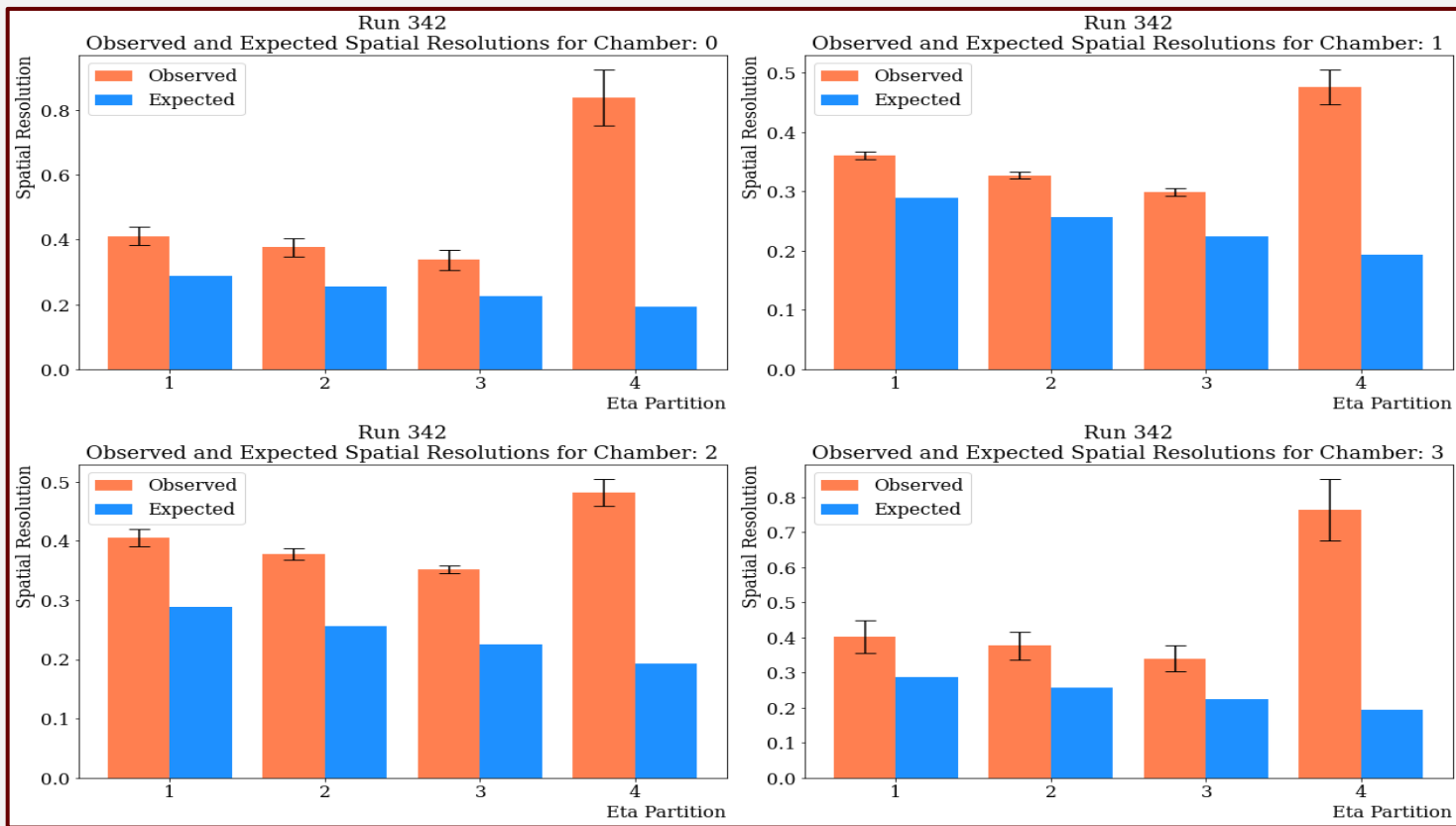
Spatial
Resolution



Efficiency



Results — Spatial Resolution



Conclusion

The results of the test beam show that the ME0 GEM detectors are following the expected rate and spatial performances

Future Work

- Map efficiency with respect to eta partition and phi
- Determine a relationship between spatial resolution and cluster size

Performance of Triple-GEM Detectors for the ME0 Station Measured in Test Beam



Thank you all

Questions?

Results — Rate vs. Distance

Backup

