

Understanding Baryon Production in Calorimeters for High-Energy Physics: Insights from Monte Carlo Simulations

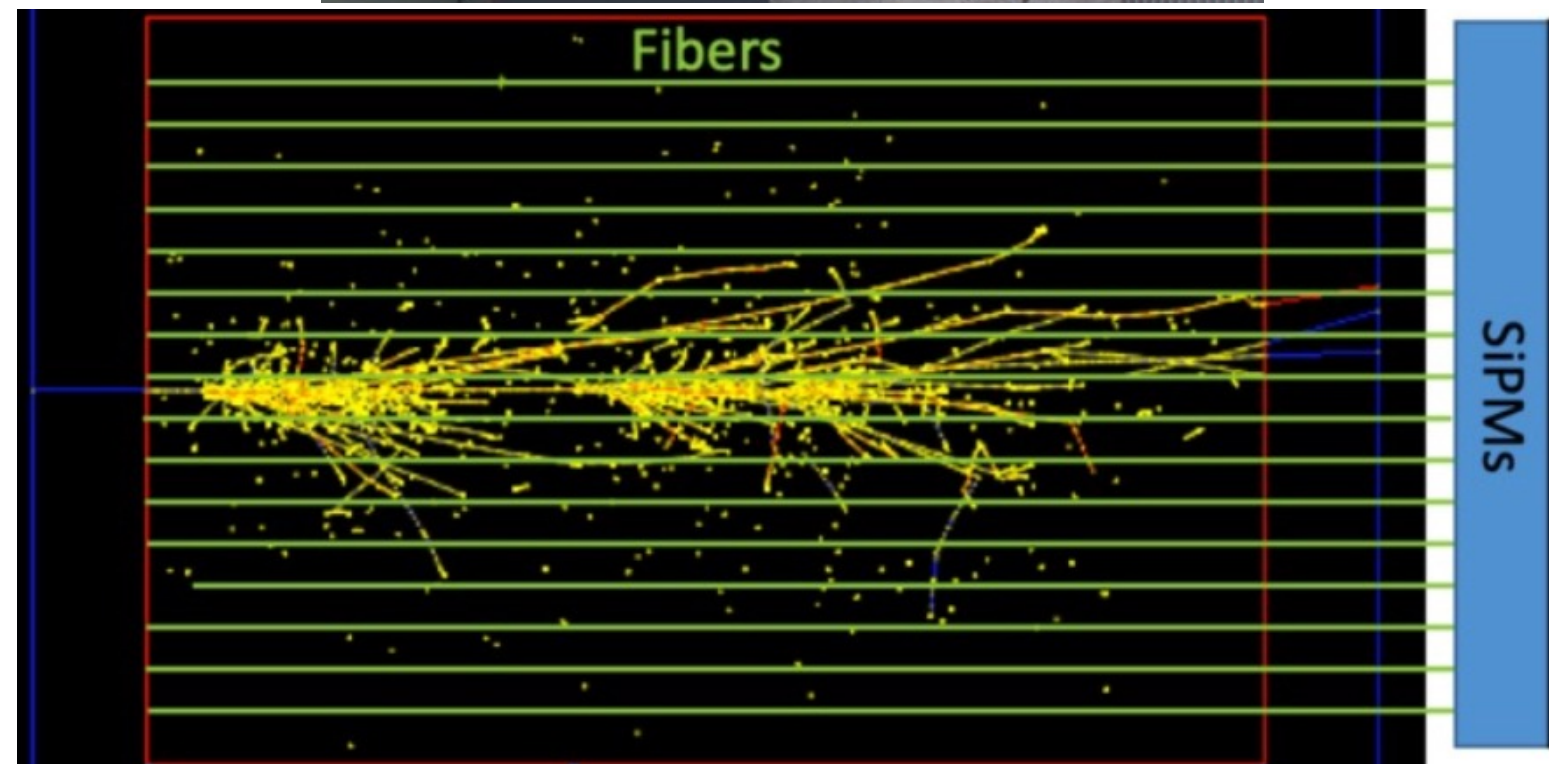
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Julian Sewell, Xander Delashaw

Advanced Particle Detector Lab

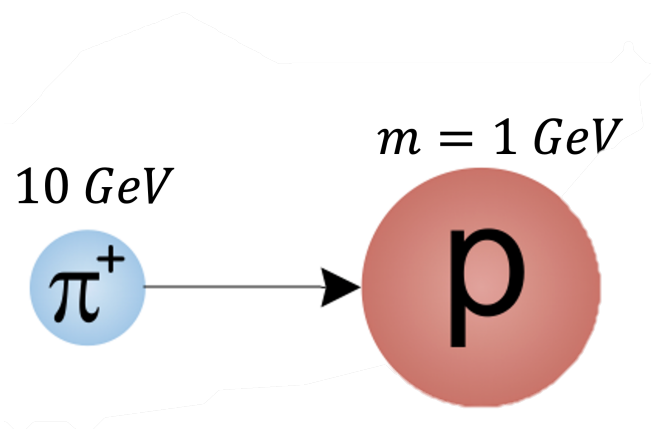
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University

Calorimeters

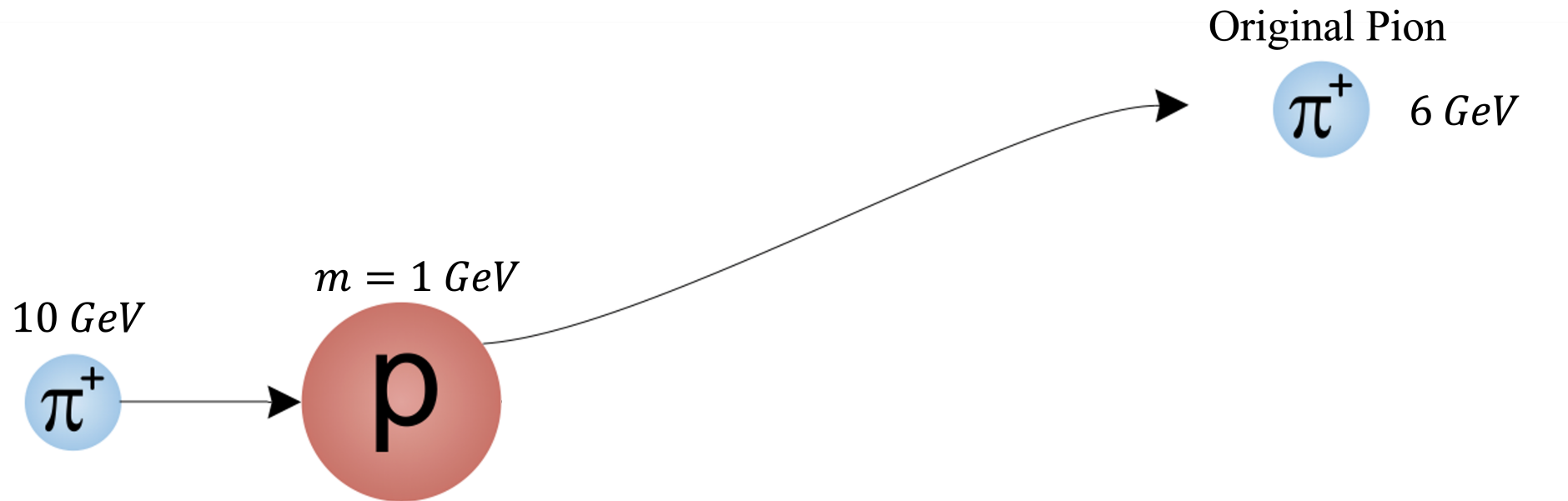
- Completely absorb particle showers
- Particles passing through fibers emit Cherenkov radiation
 - Allows Energy Measurement



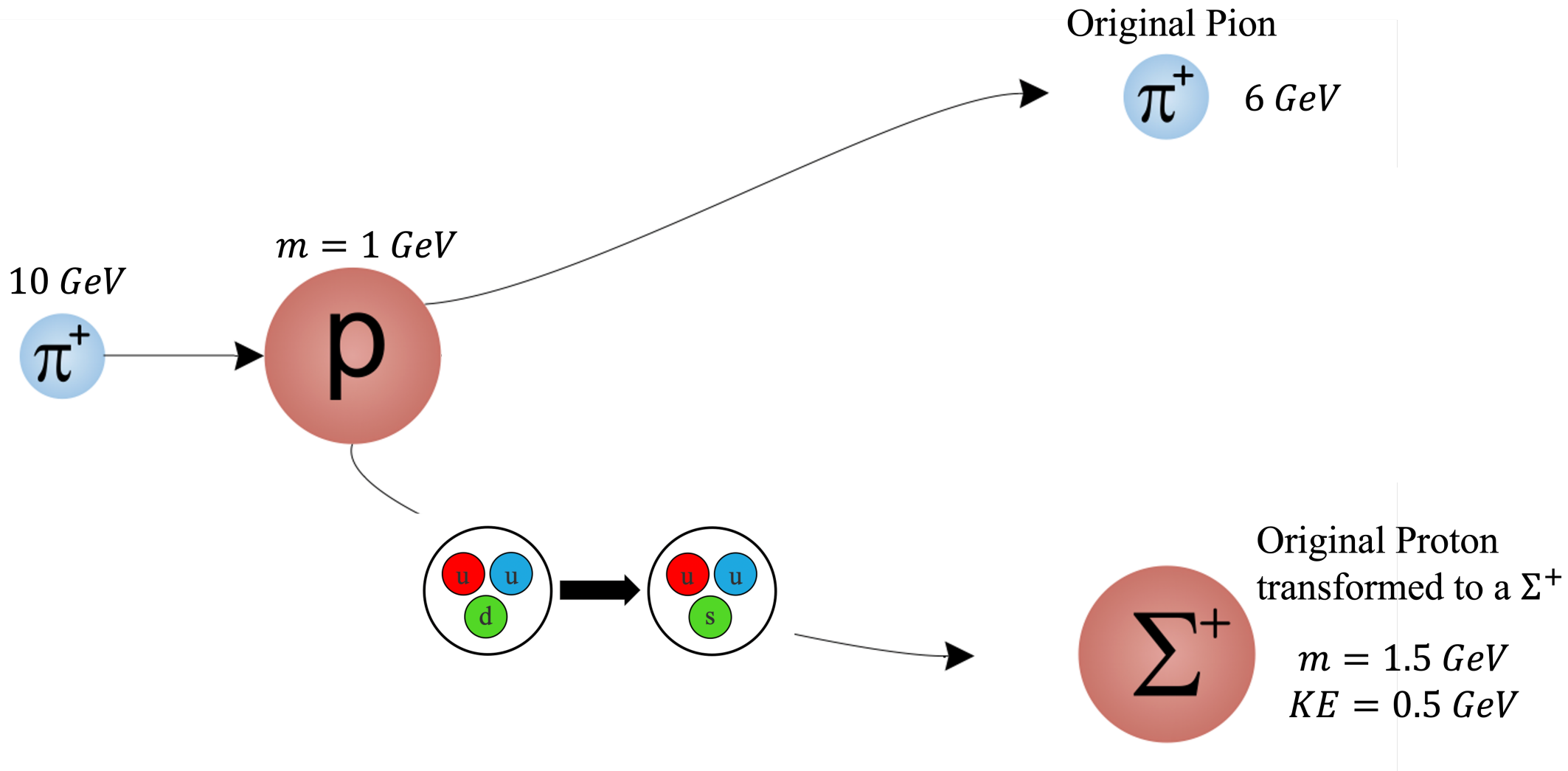
10 GeV Pion Collision on Liquid Hydrogen



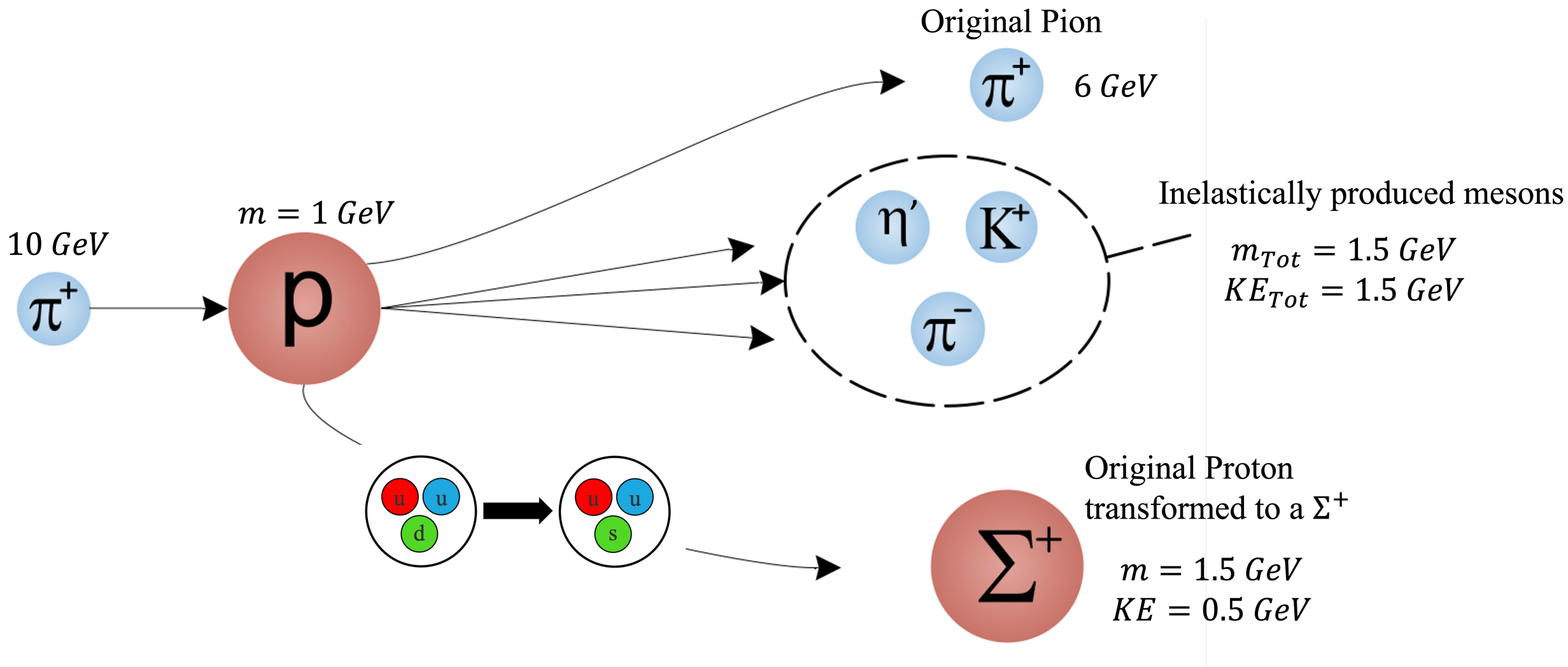
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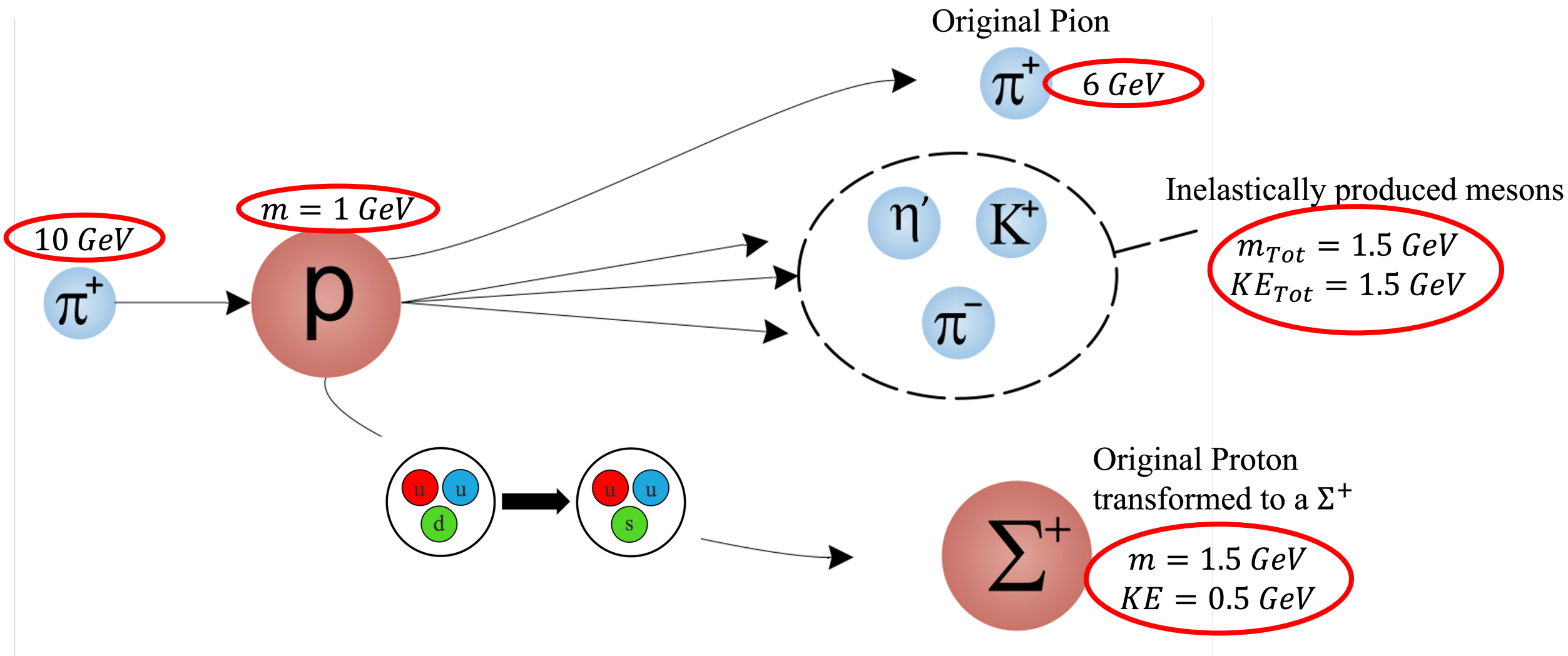
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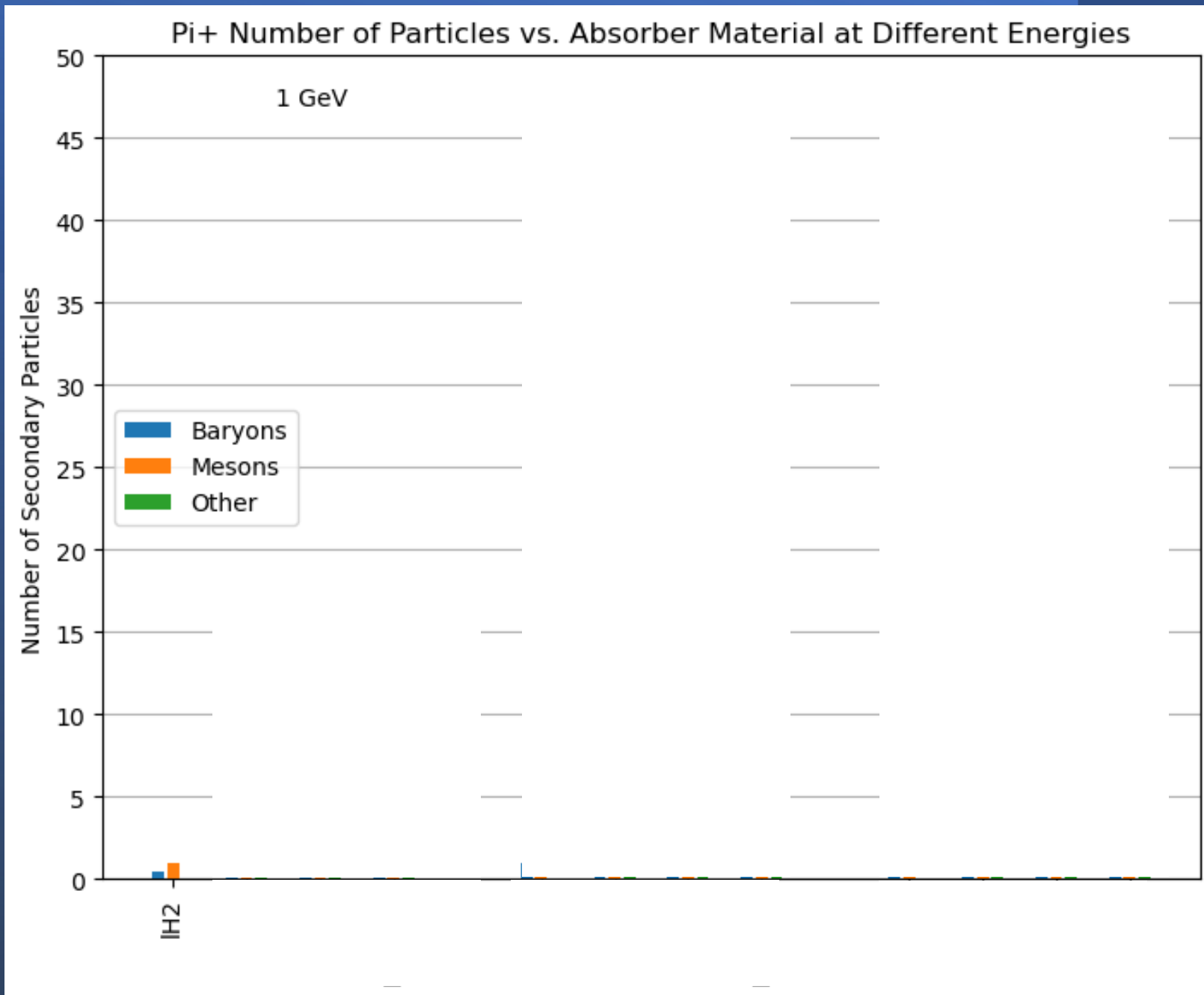


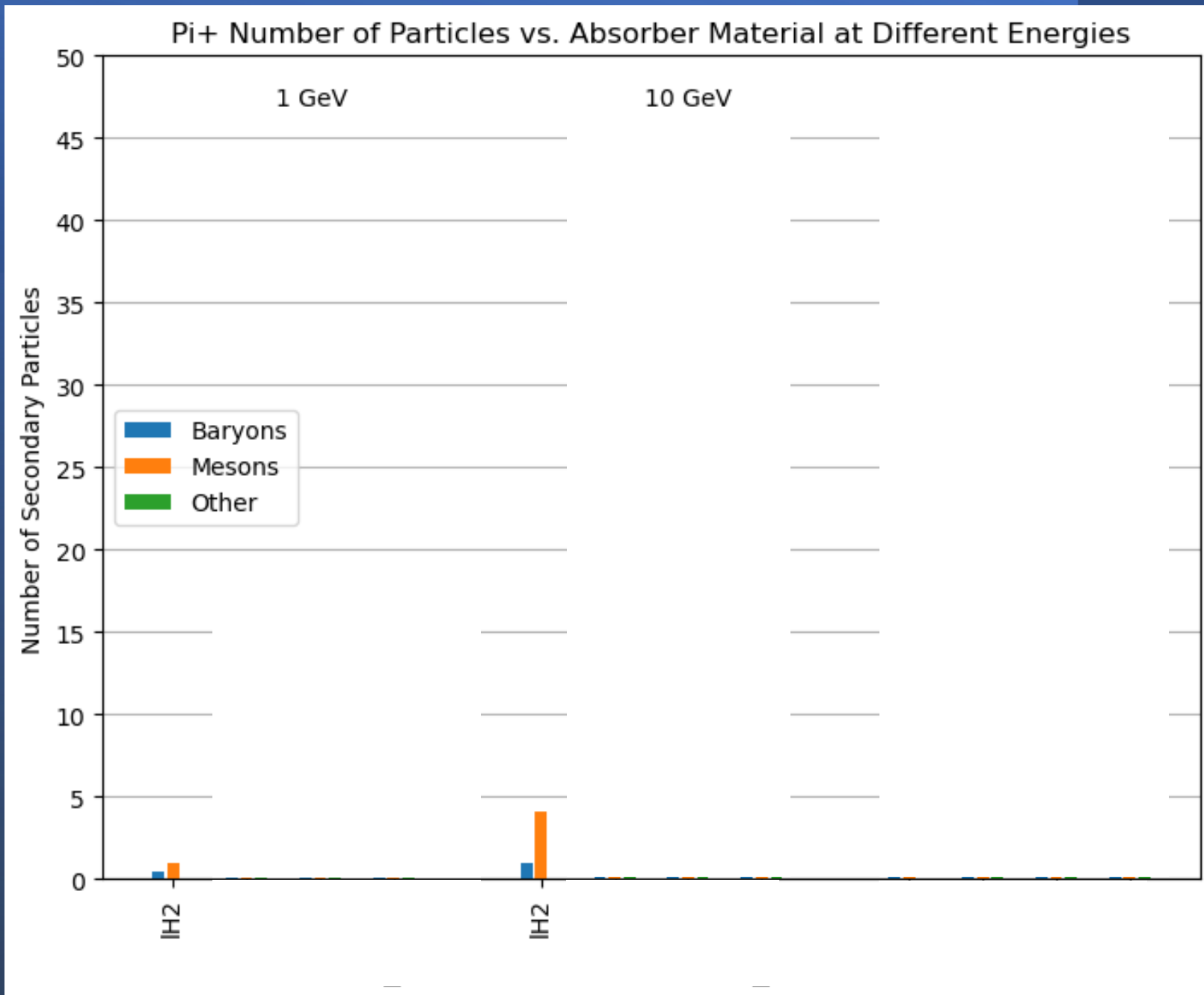
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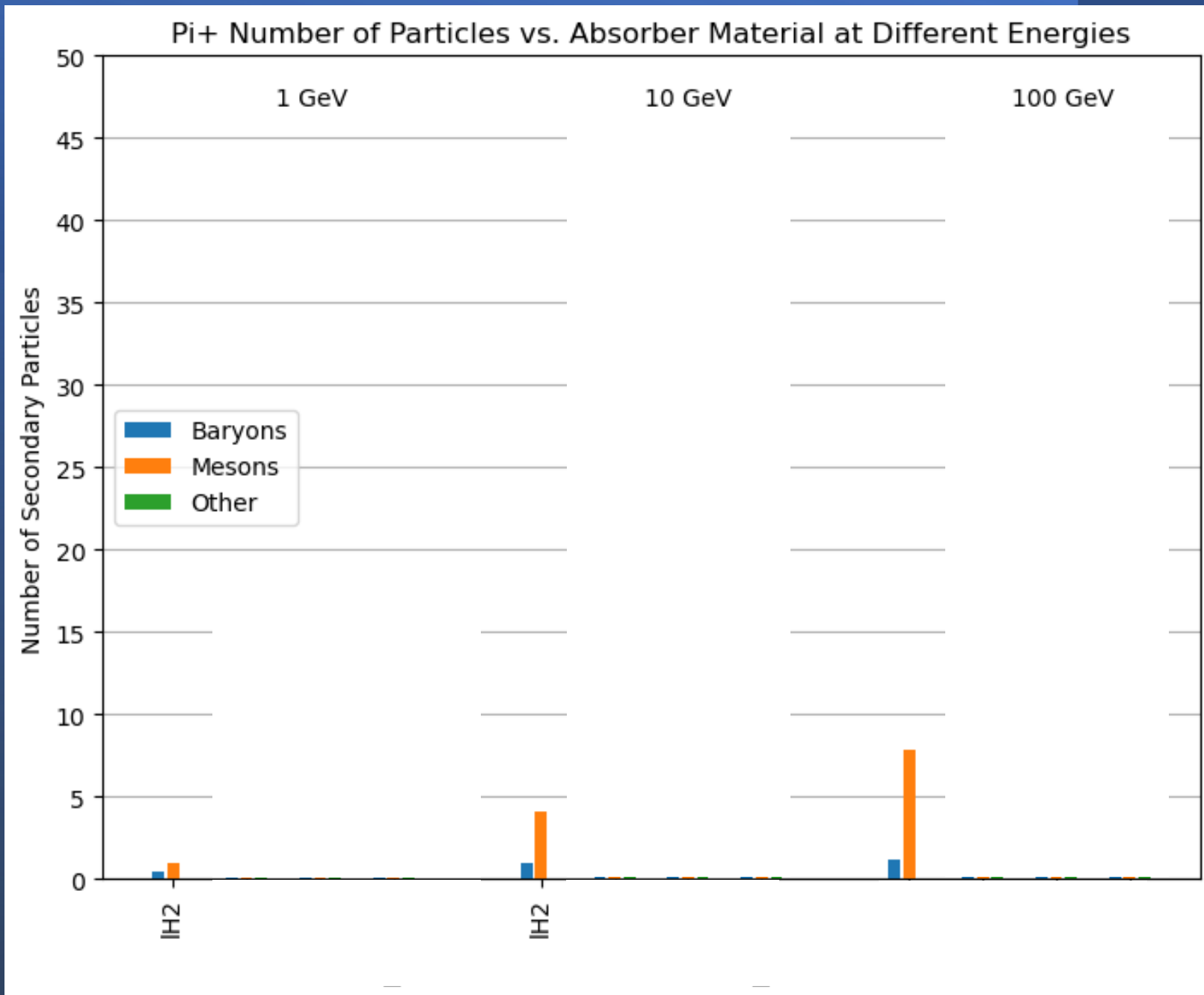


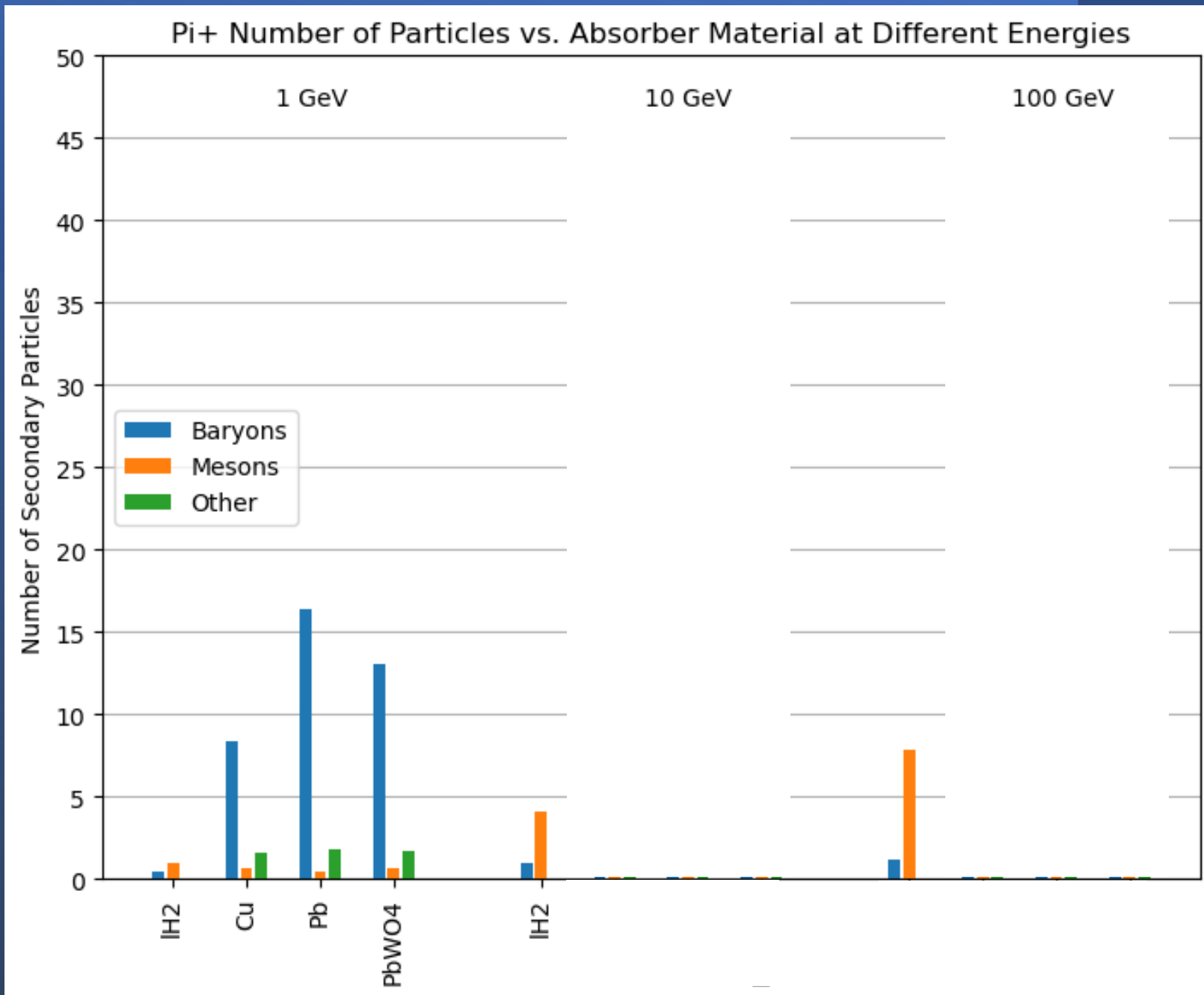
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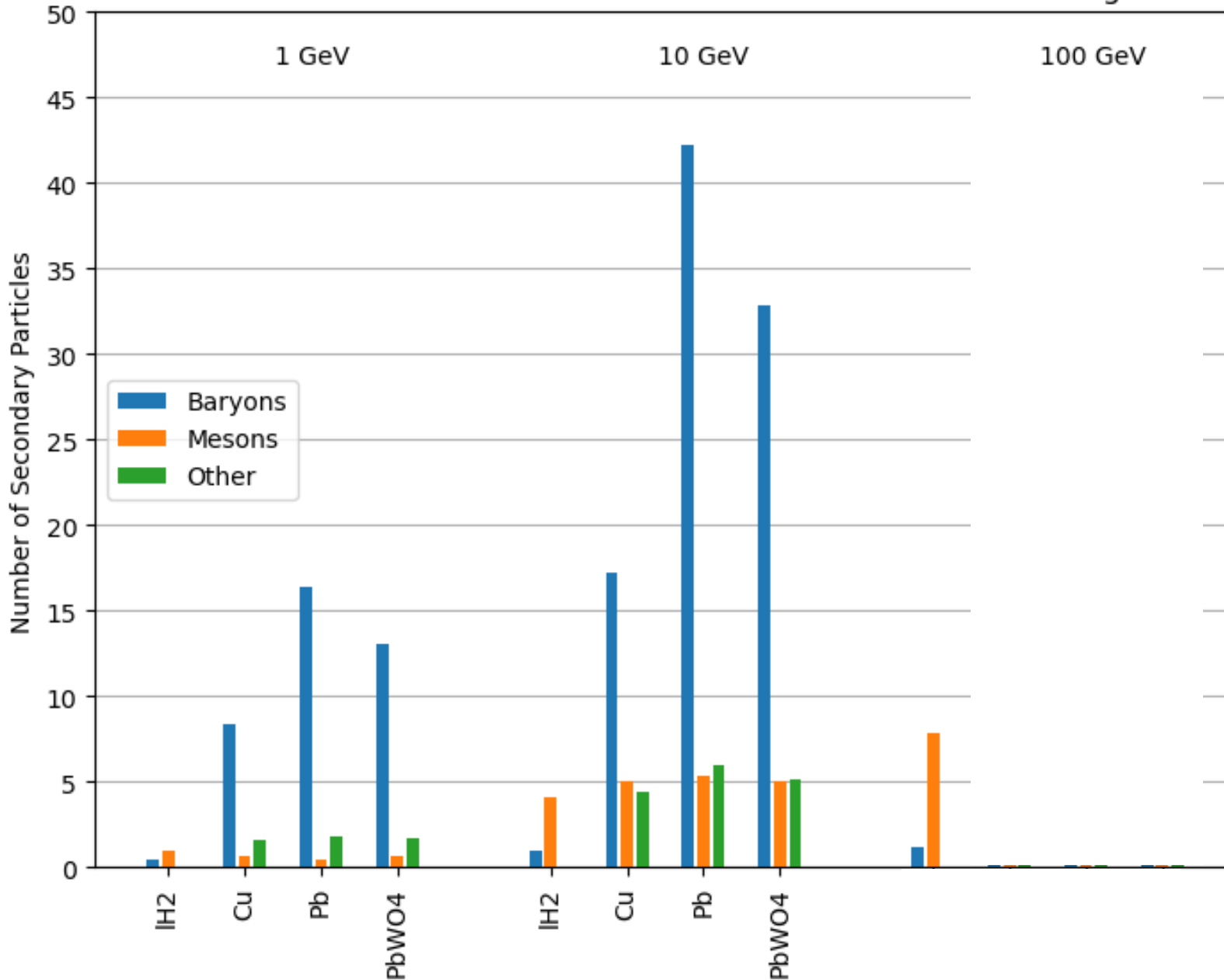


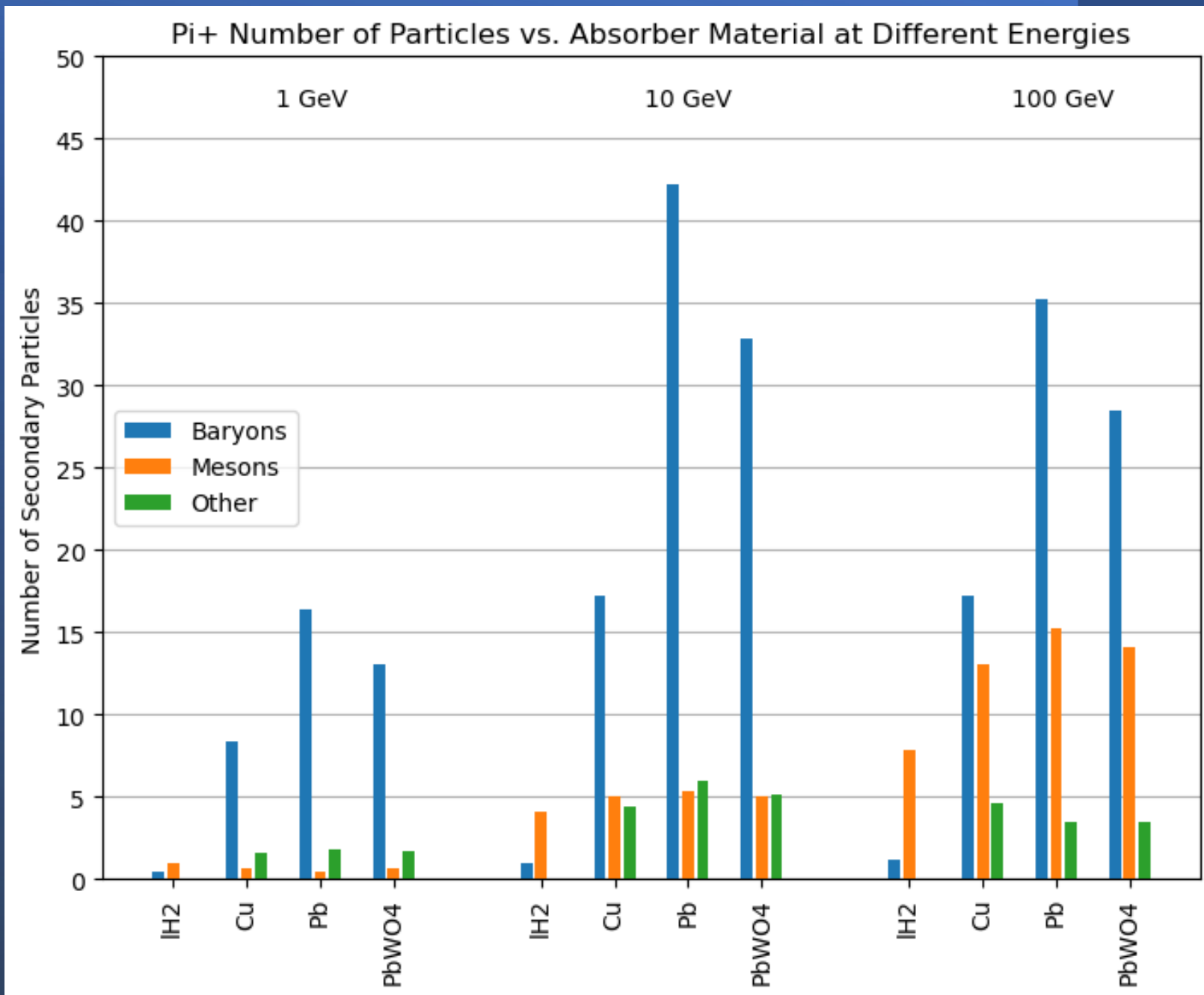




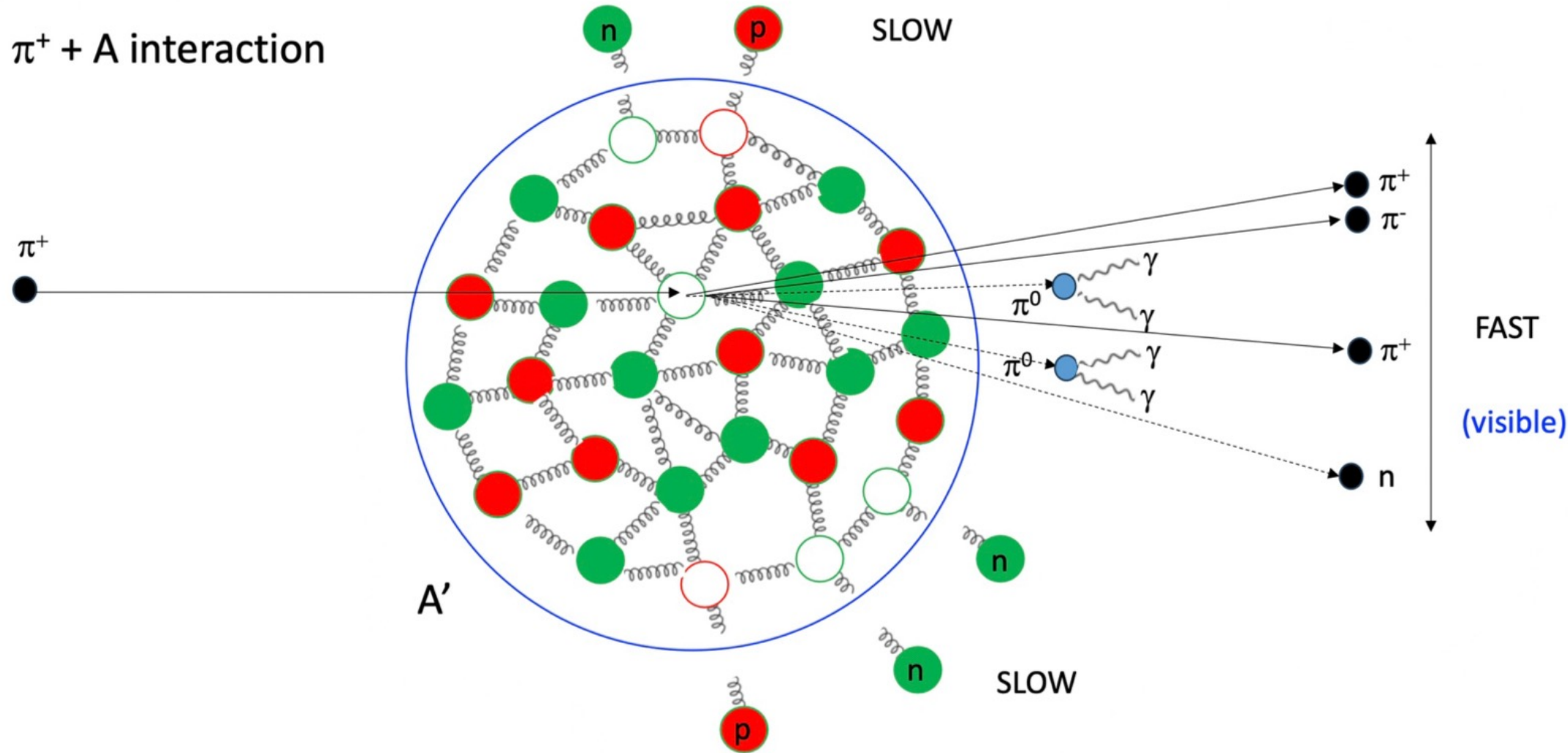


Pi+ Number of Particles vs. Absorber Material at Different Energies

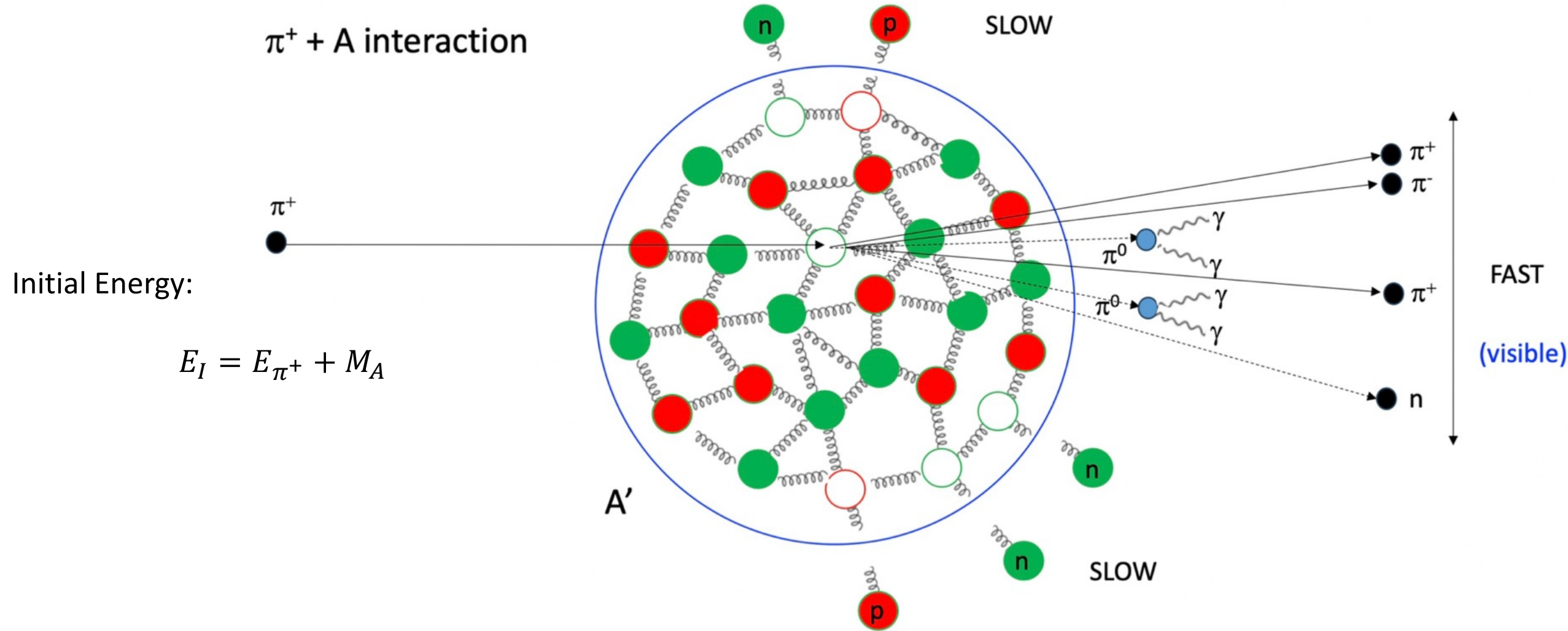




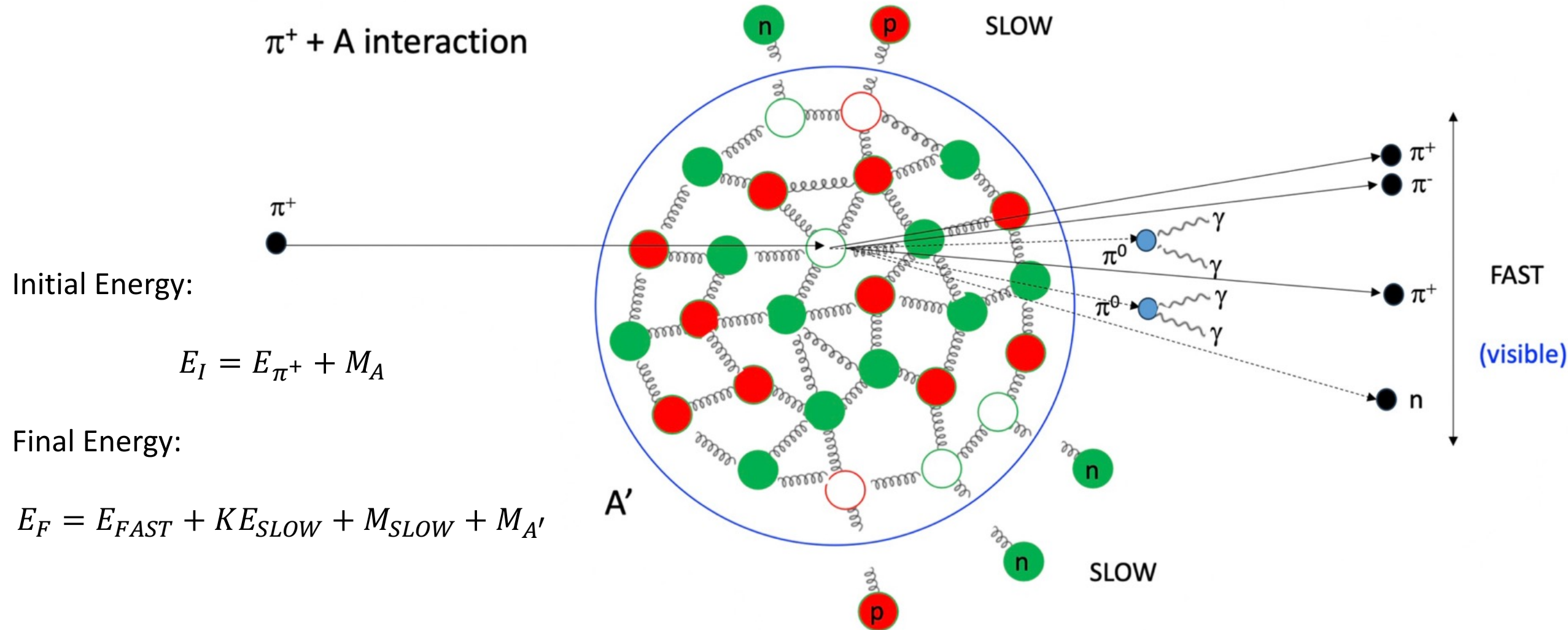
Collision on a Nucleus



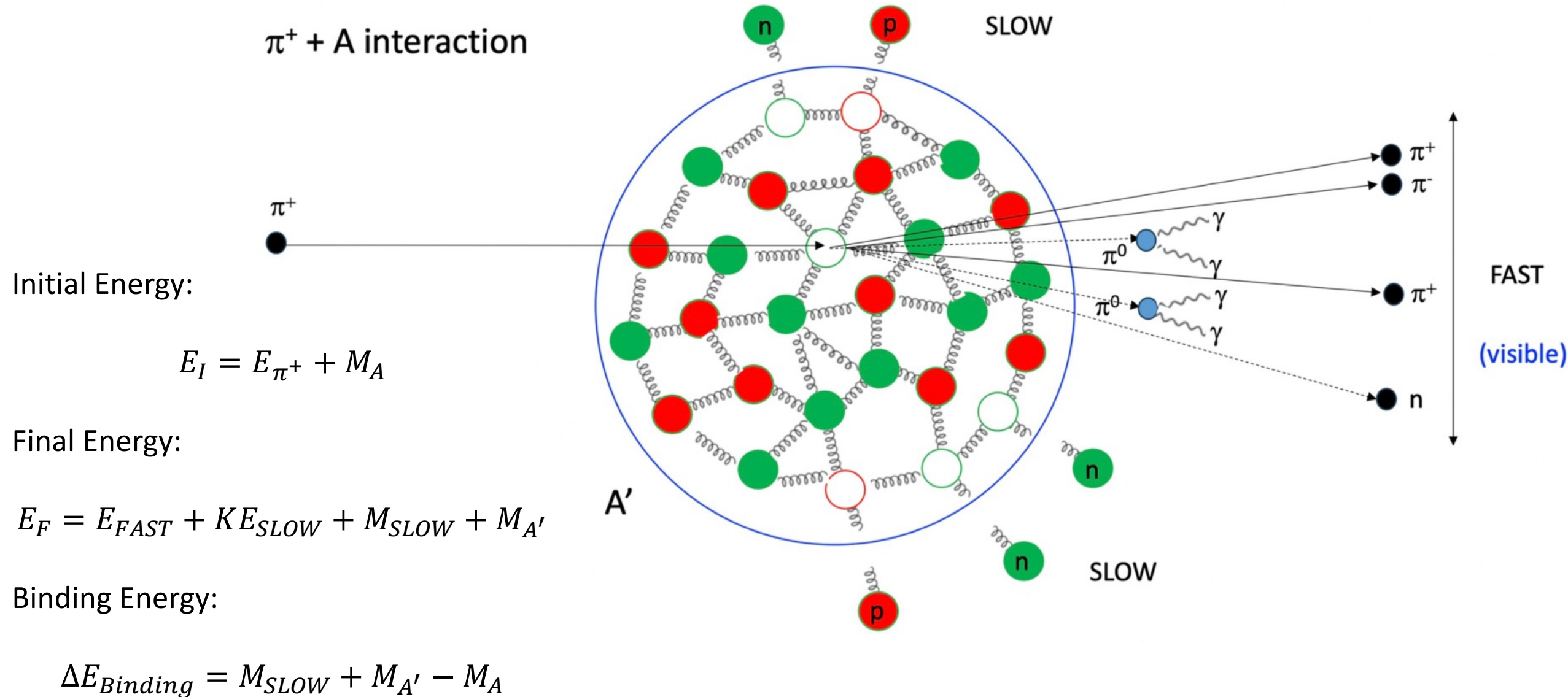
Collision on a Nucleus

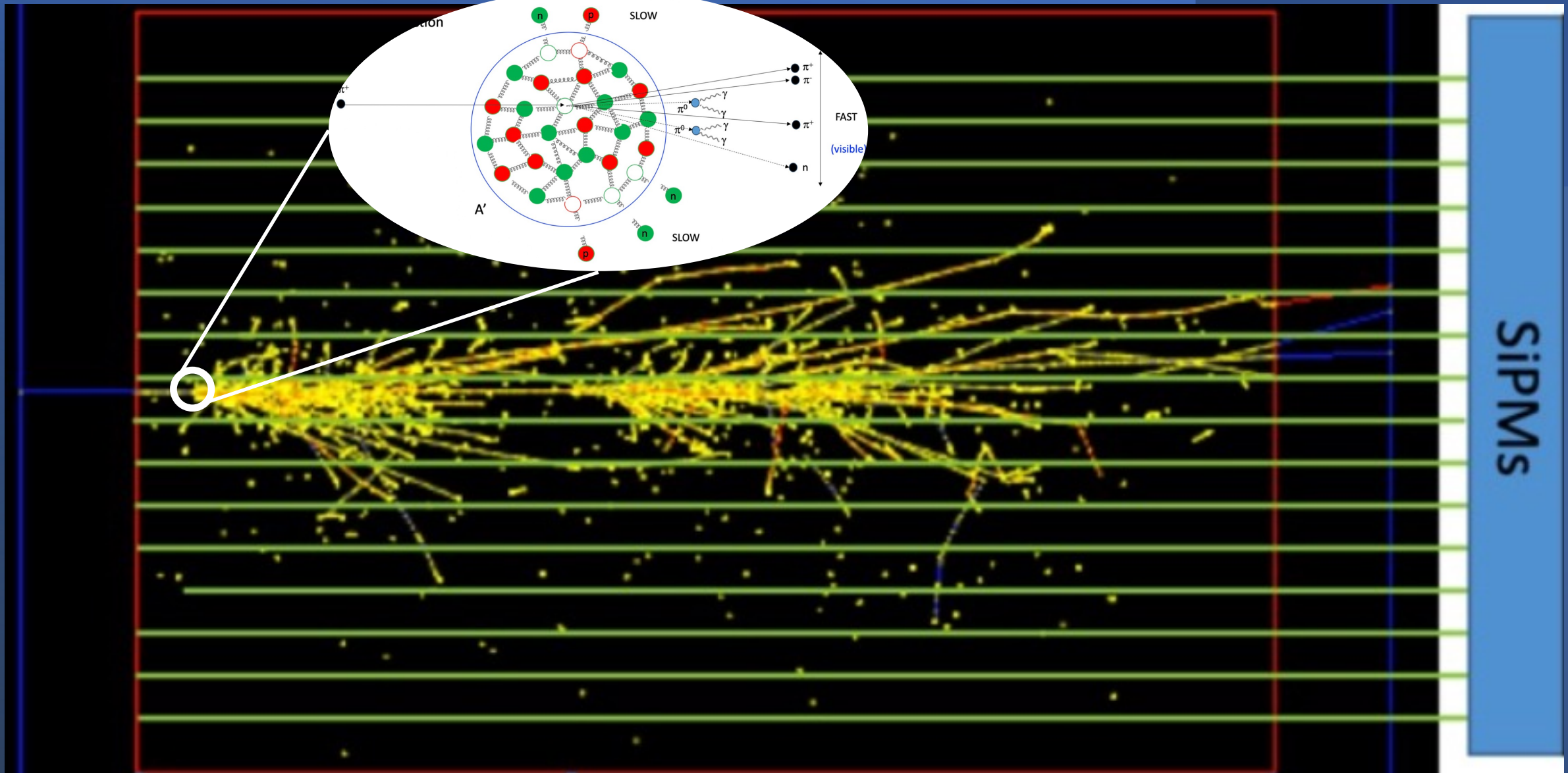


Collision on a Nucleus

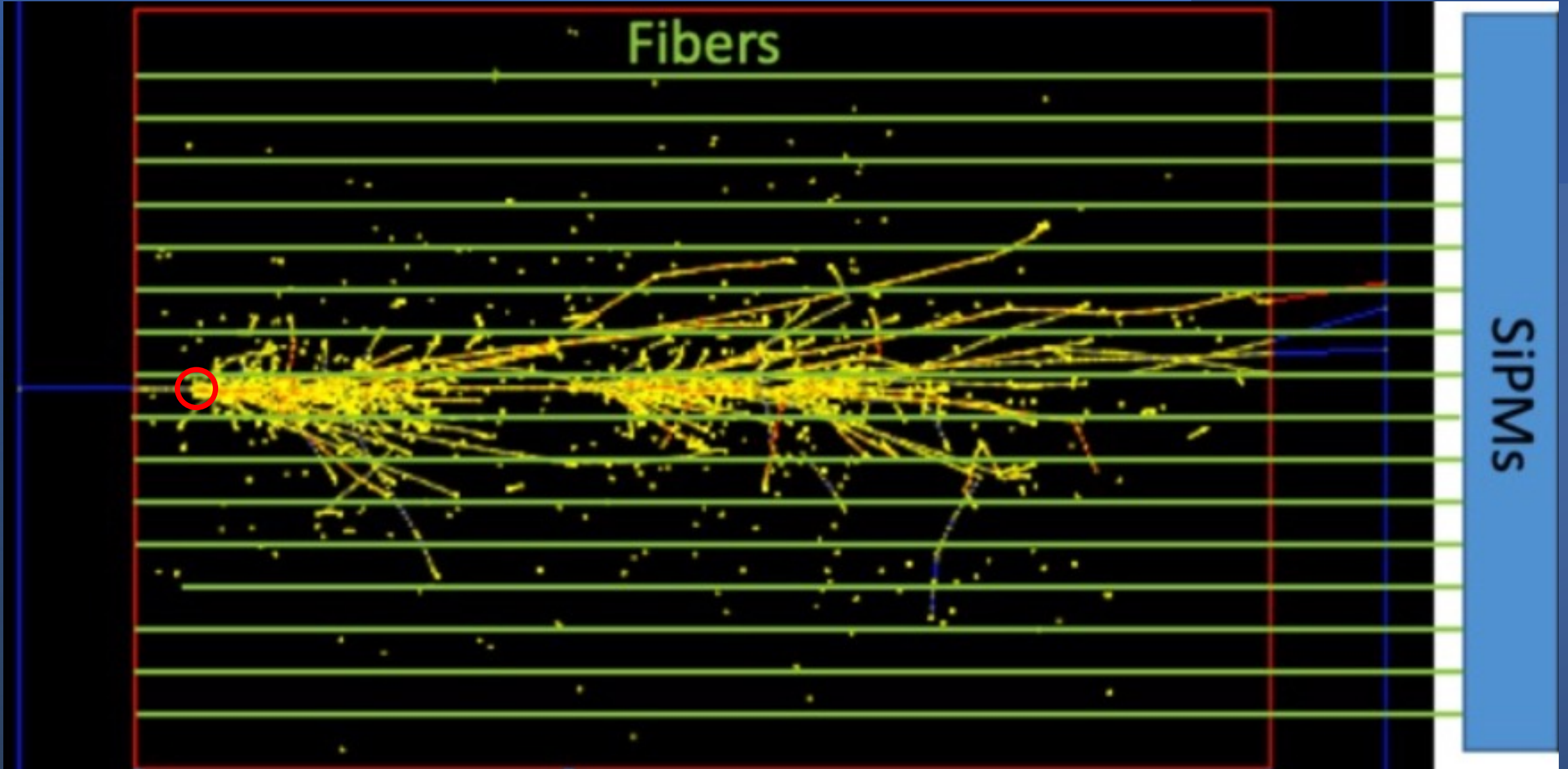


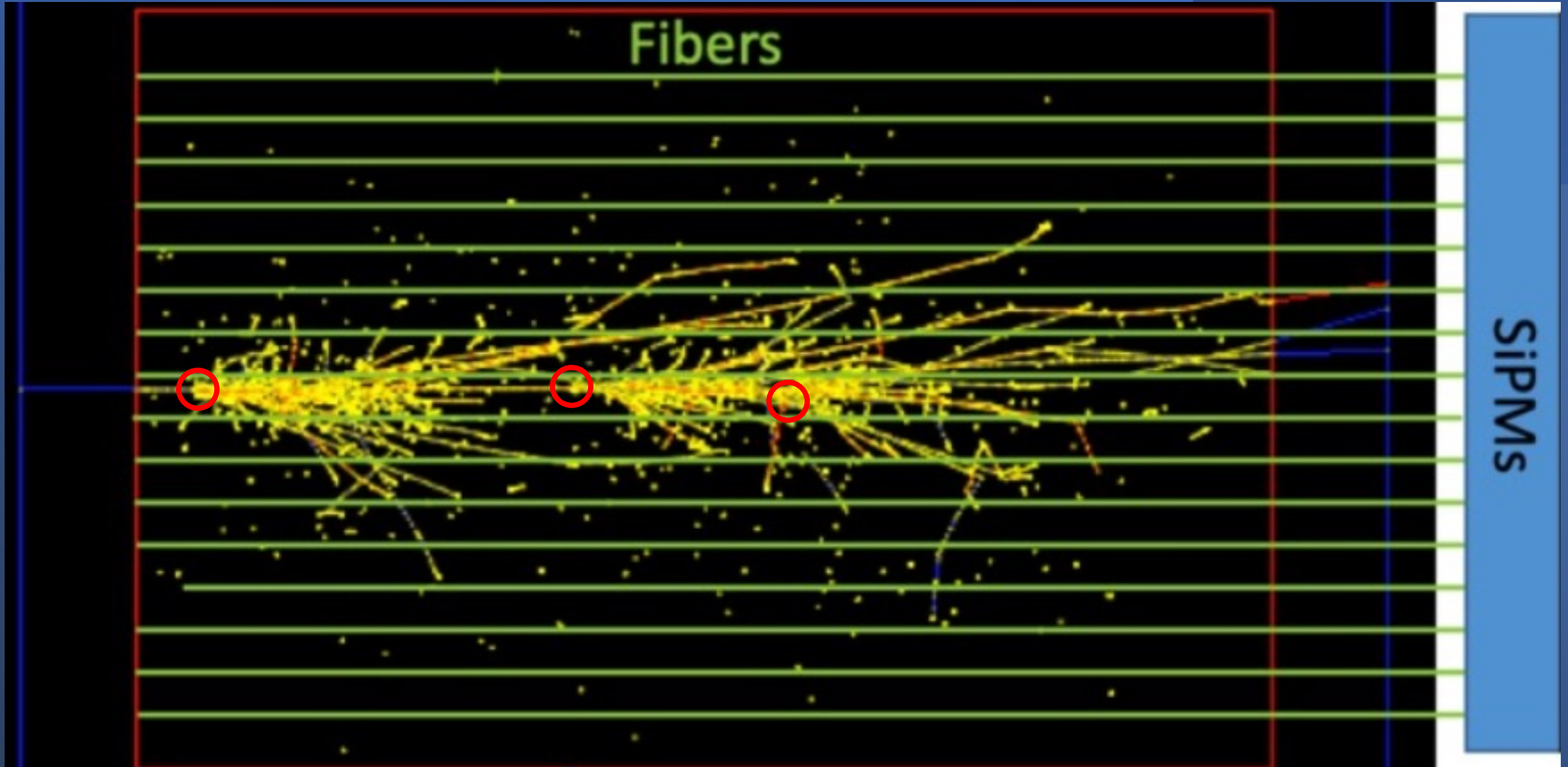
Collision on a Nucleus

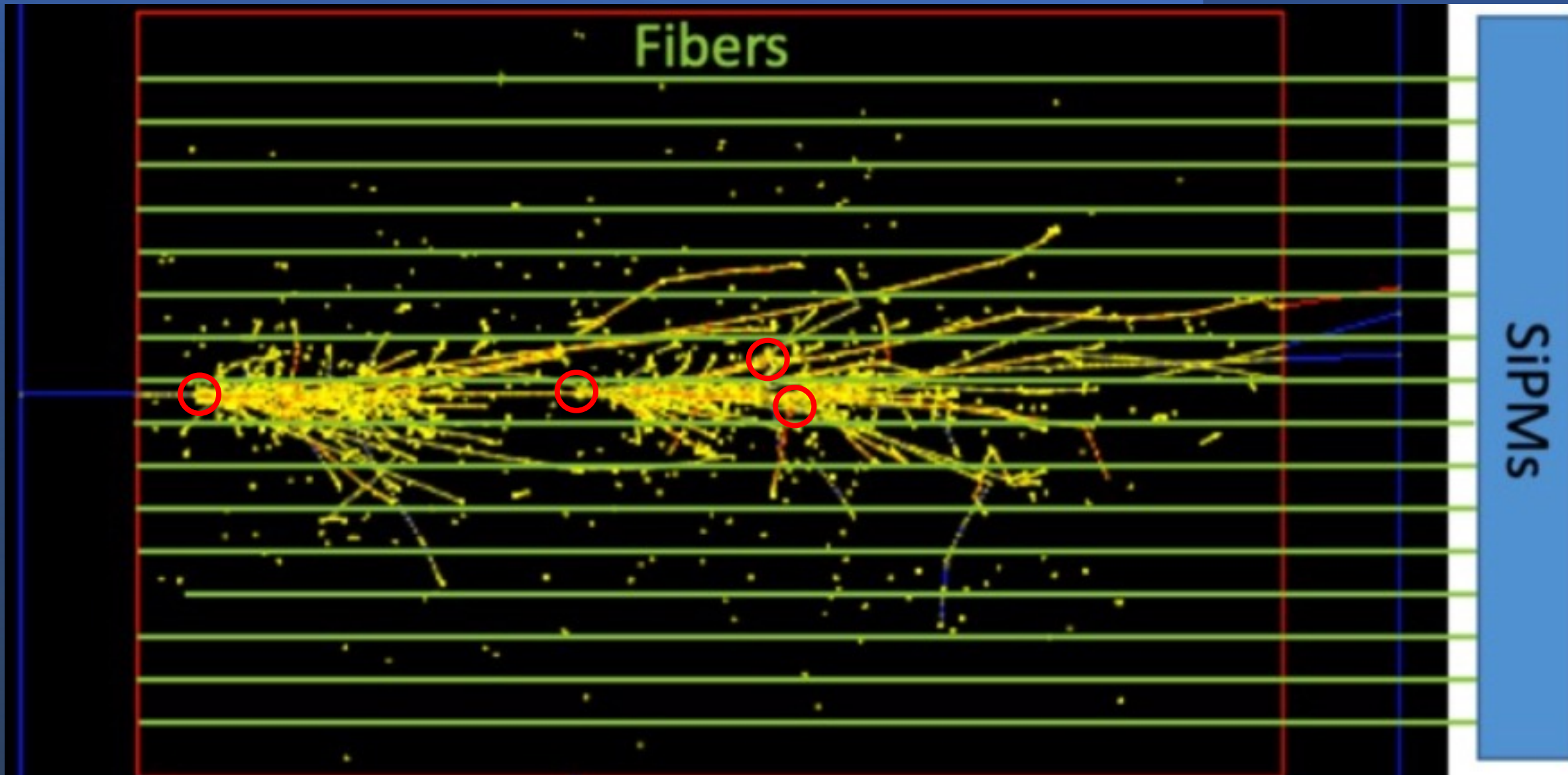


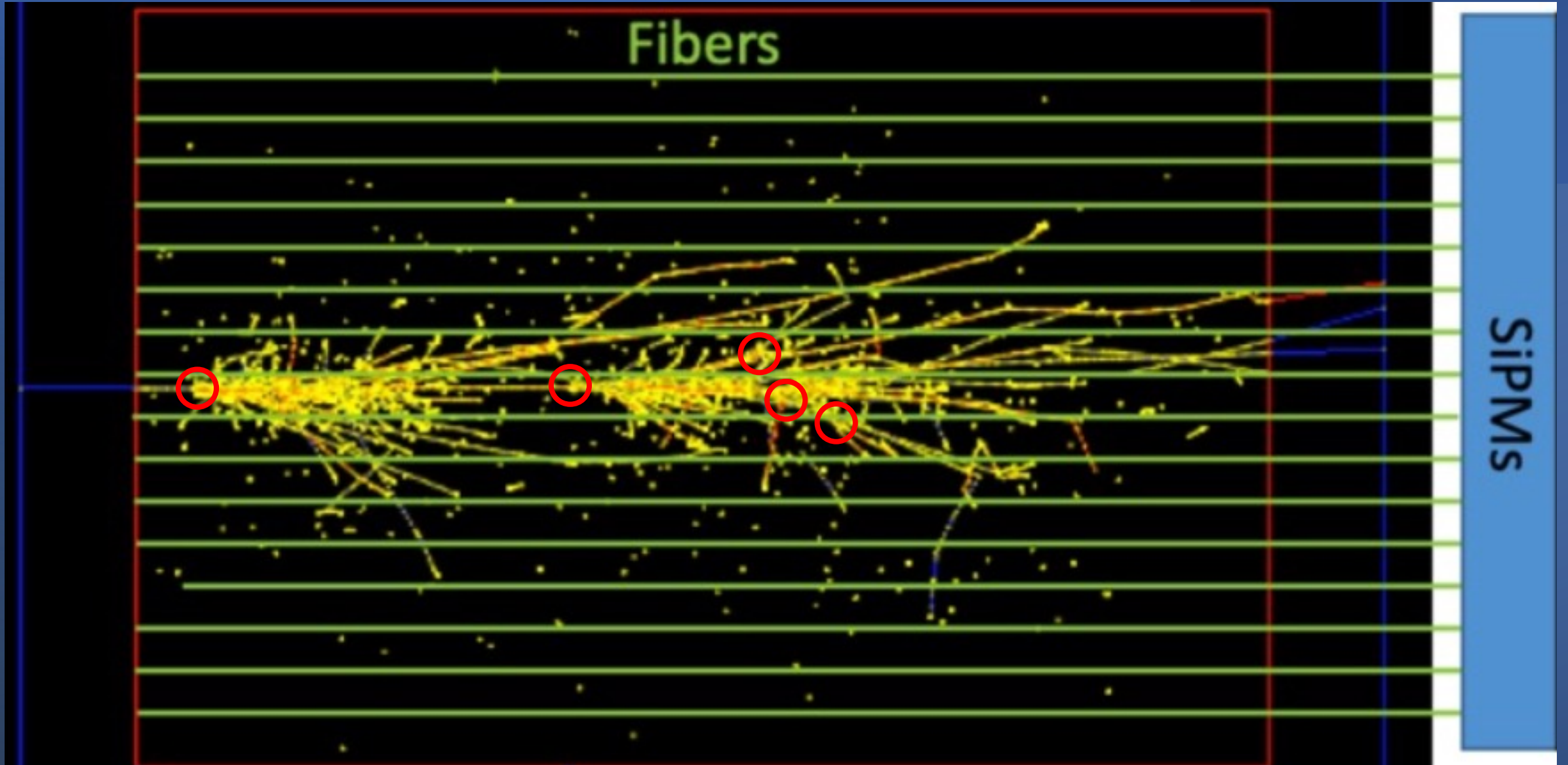


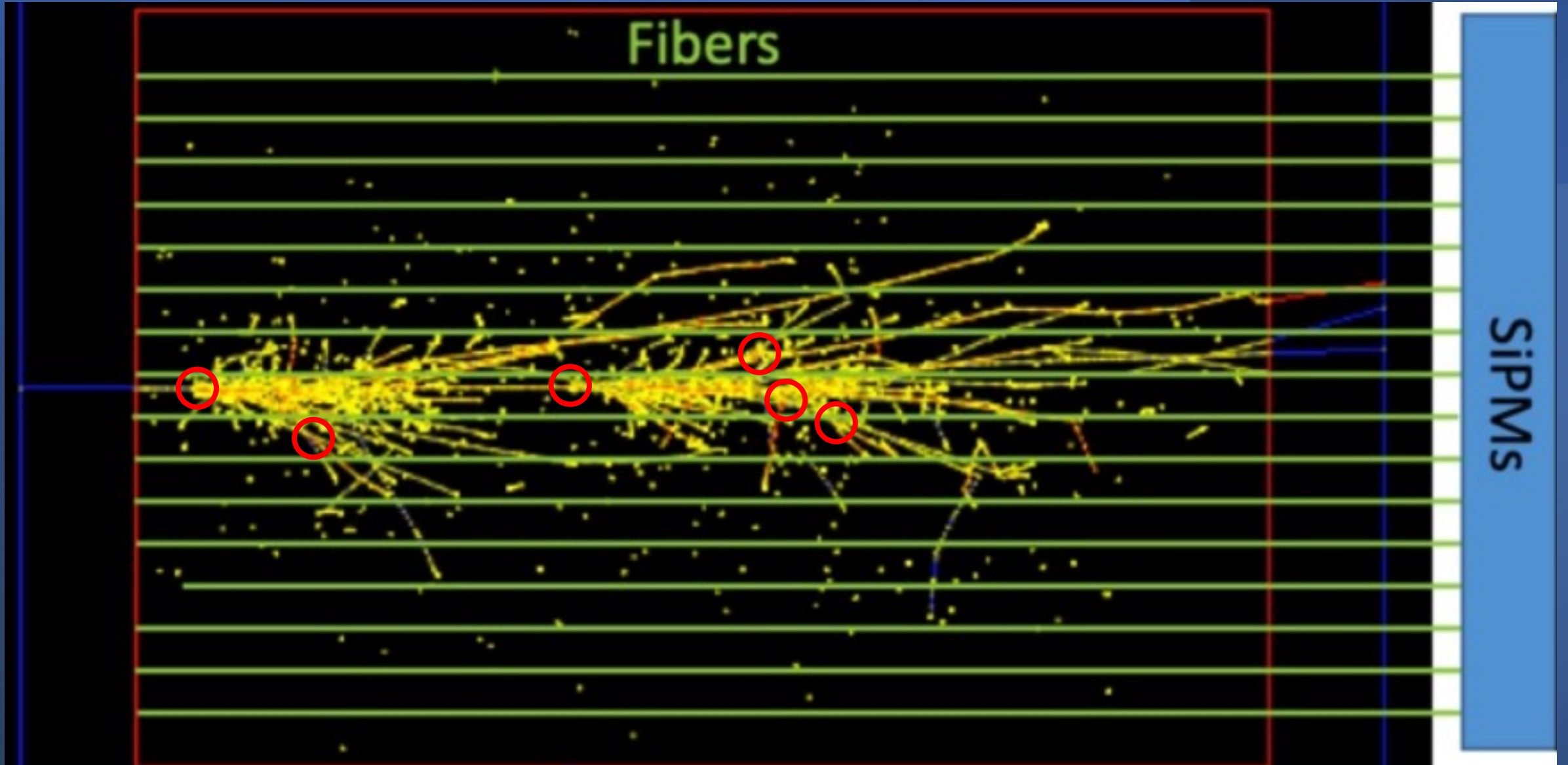
SIPMS



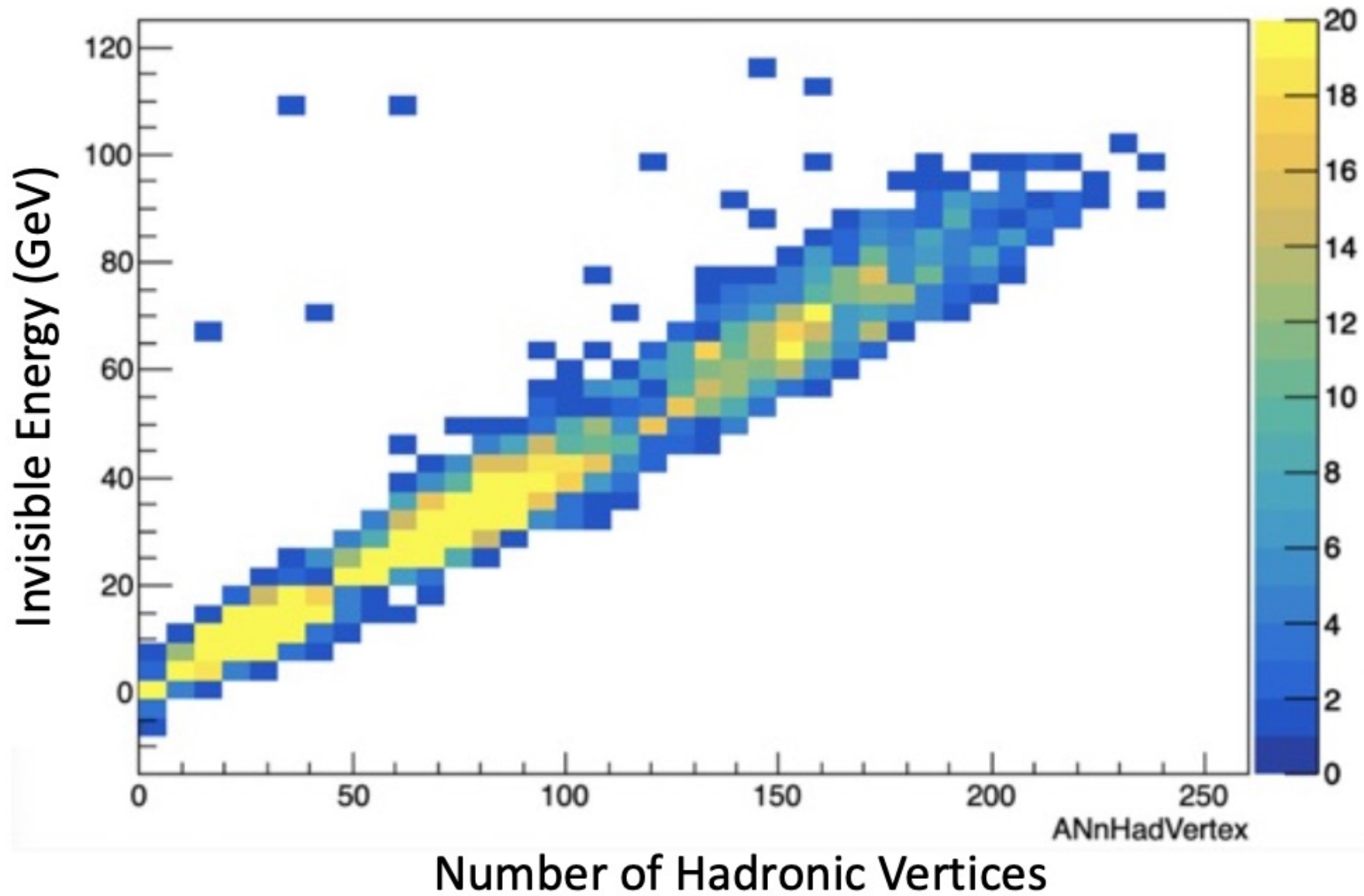




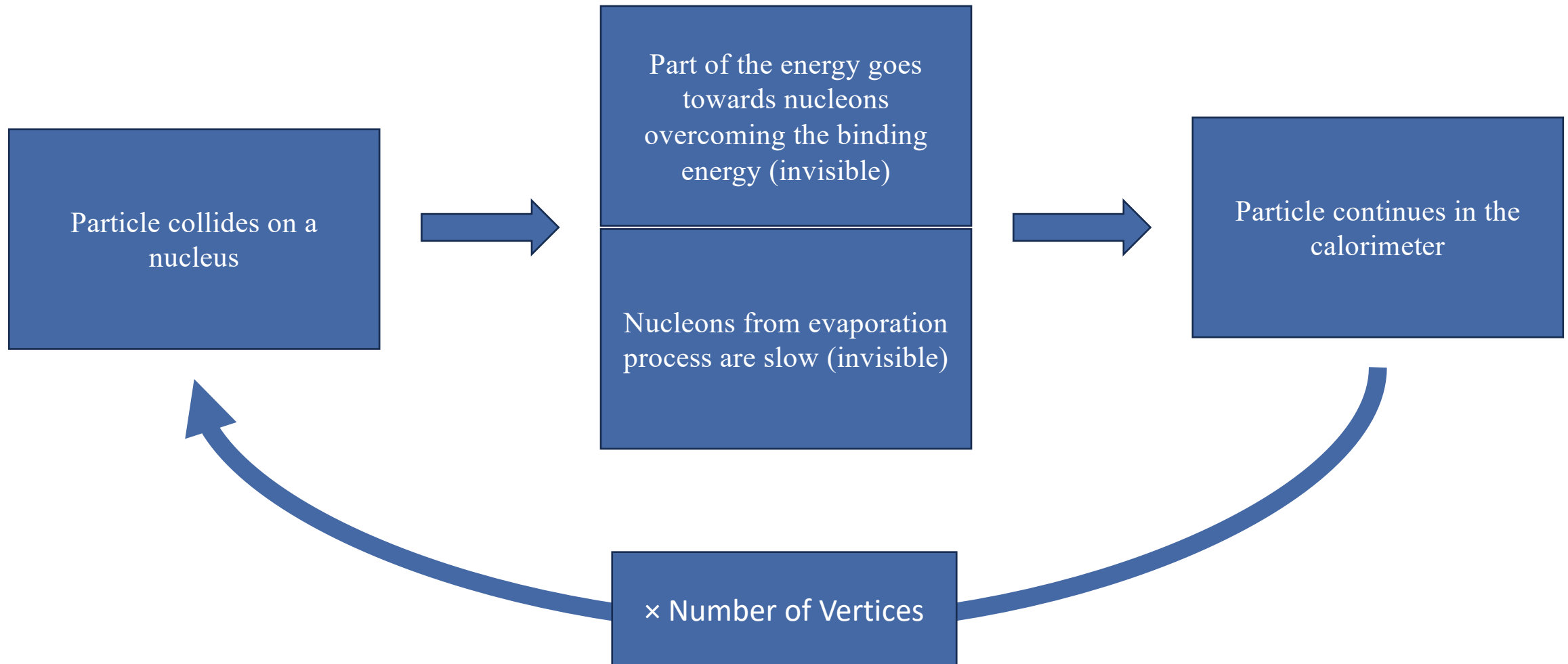




Invisible Energy in Cu vs Number of Hadronic Vertices



Conclusion



Acknowledgements

- Dr. Shuichi Kunori and Dr. Nural Akchurin for their continuing aid and mentorship
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