

# My Previous and Current Activities Life and Research PostDoc Meeting

Yuri Mitrakov  
April 19, 2024

## **Iurii (Yuri) Mitrankov, 29**

### **Education (SPbPU)**

- Ph. D. – Elementary particle and high energy physics, 2018-2022
- M. Phys. – Elementary particle and nuclear physics, 2016-2018
- B. Phys. – Physics, 2012-2018

### **Work experience**

- Research assistant at SPbPU (Jul 2017 - ongoing)
- Teaching assistant at SPbPU (Jan 2019 - ongoing)

April 20<sup>th</sup>, 2023 – PhD  
defense  
Additionally, teaching  
qualification

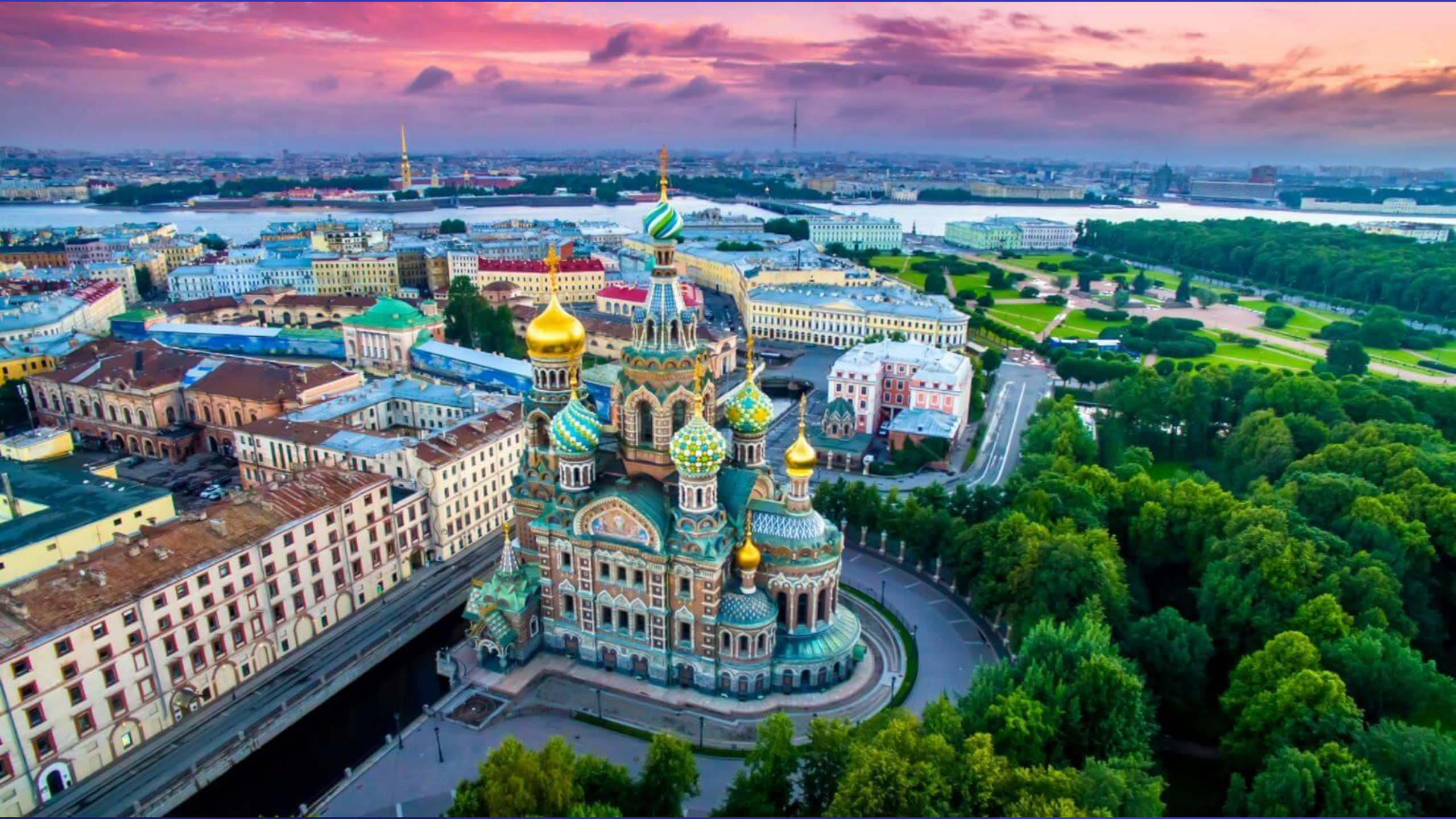
### **Wedding Anniversary**

- 18 June 2020

### **Hobbies**

- Traveling, Basketball, Hiking, Chess puzzles







# Saint-Petersburg





# Saint-Petersburg





# Saint-Petersburg



# Saint-Petersburg

number of sunny days in sankt petersburg russia

× | 🗂️ 🗣️ 📷 🔍

Все Картинки Новости Видео Покупки ⋮ Ещё Инструменты

Результатов: примерно 4 900 000 (0,38 сек.)

## 62 days

On average, the city enjoys **62 days** of sunshine a year (mostly in the summer), as well as abundant precipitation. St. Petersburg even claims to be the rain capital of Russia – so a raincoat is essential in any season! June and July are the most popular months for visiting St.

number of sunny days in new york city

× | 🗂️ 🗣️ 📷 🔍

Все Картинки Новости Видео Покупки ⋮ Ещё Инструменты

Результатов: примерно 50 700 000 (0,38 сек.)

Annually, the city averages **234 days** with at least some sunshine. The USDA plant hardiness zones are 7a and 7b.



# Saint-Petersburg



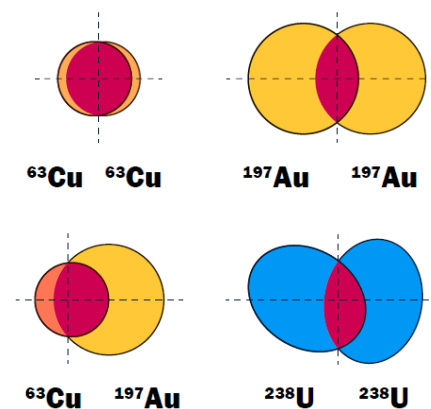
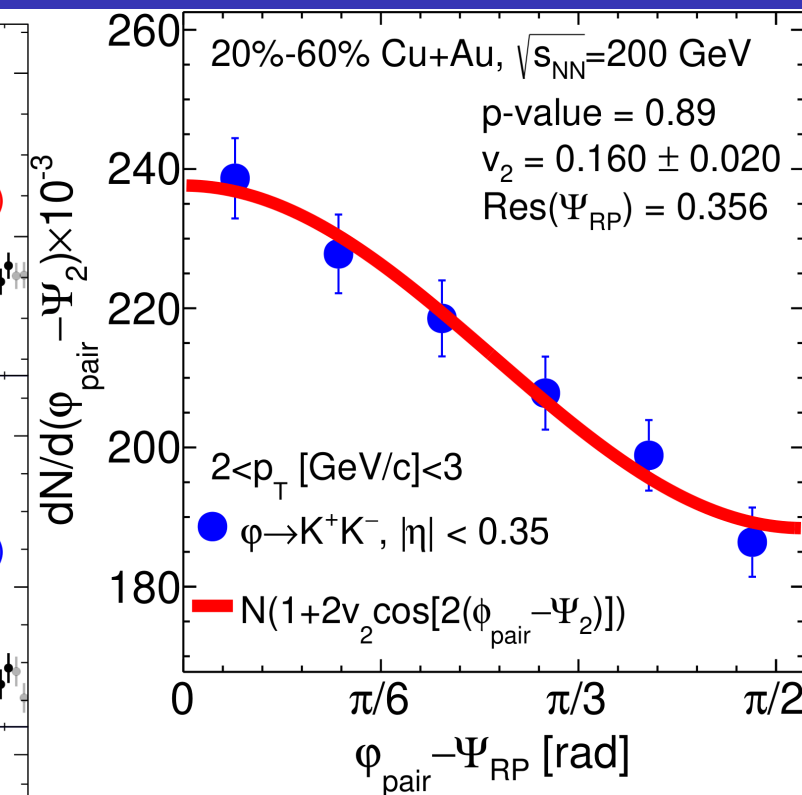
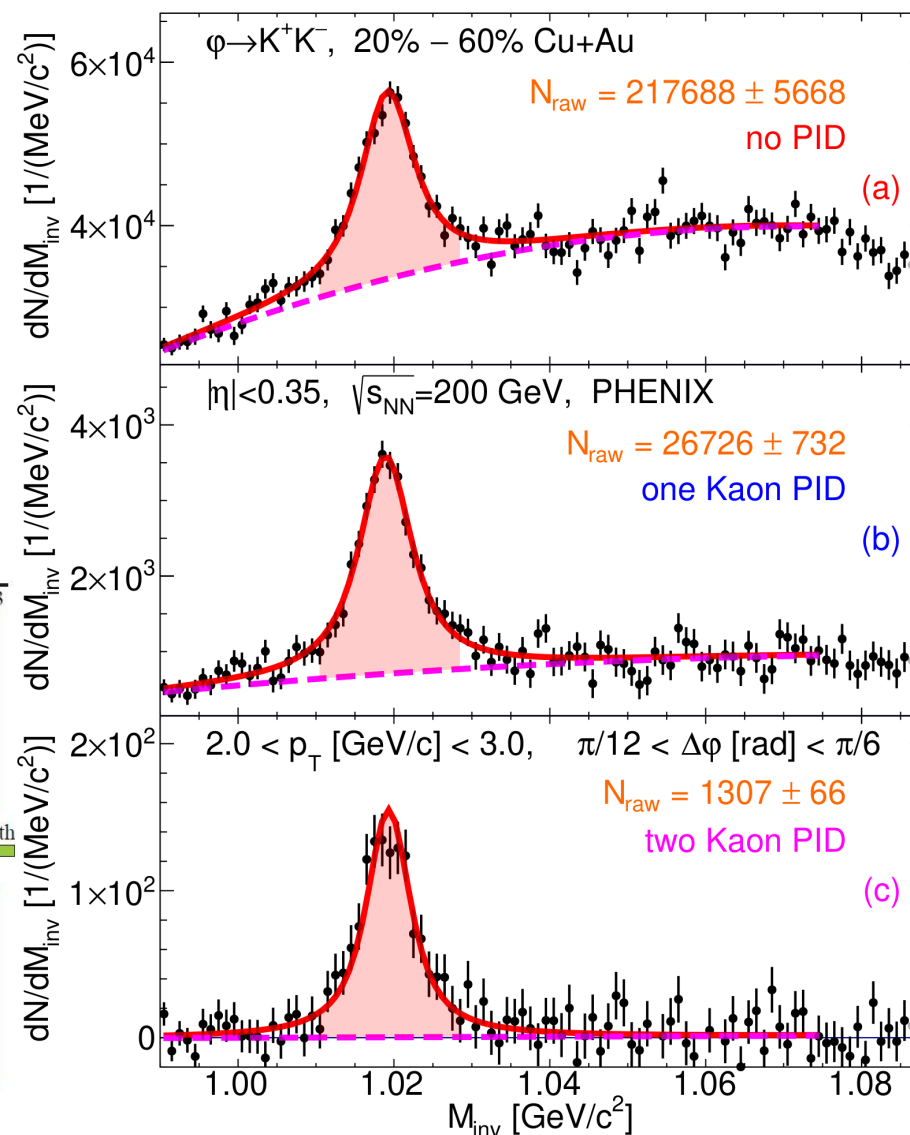
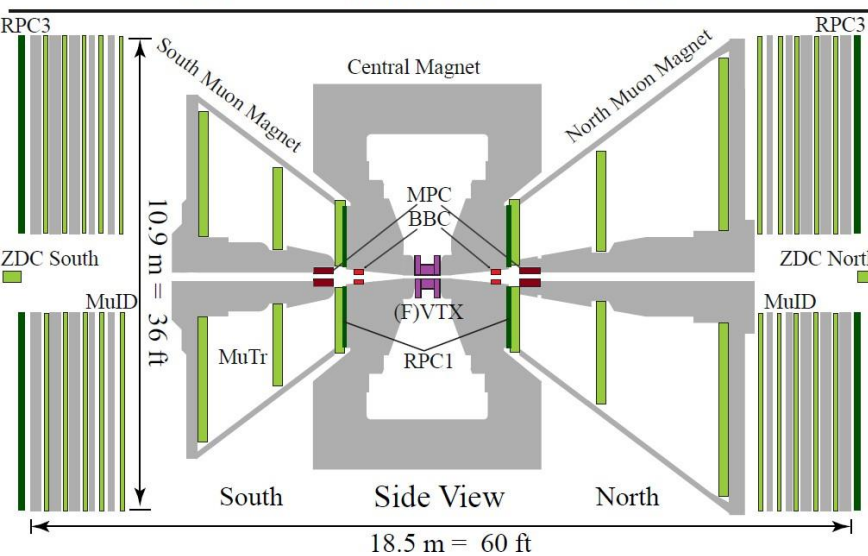
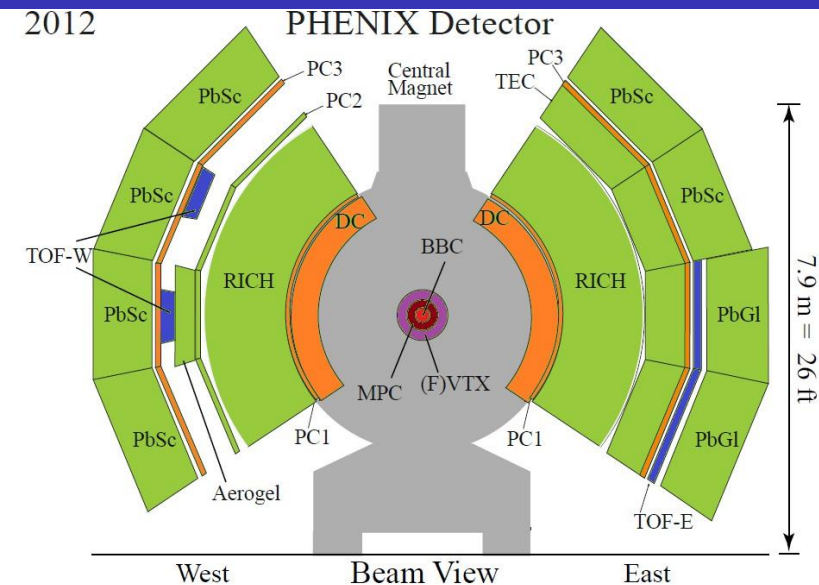


# Elementary particle and high energy physics. Results



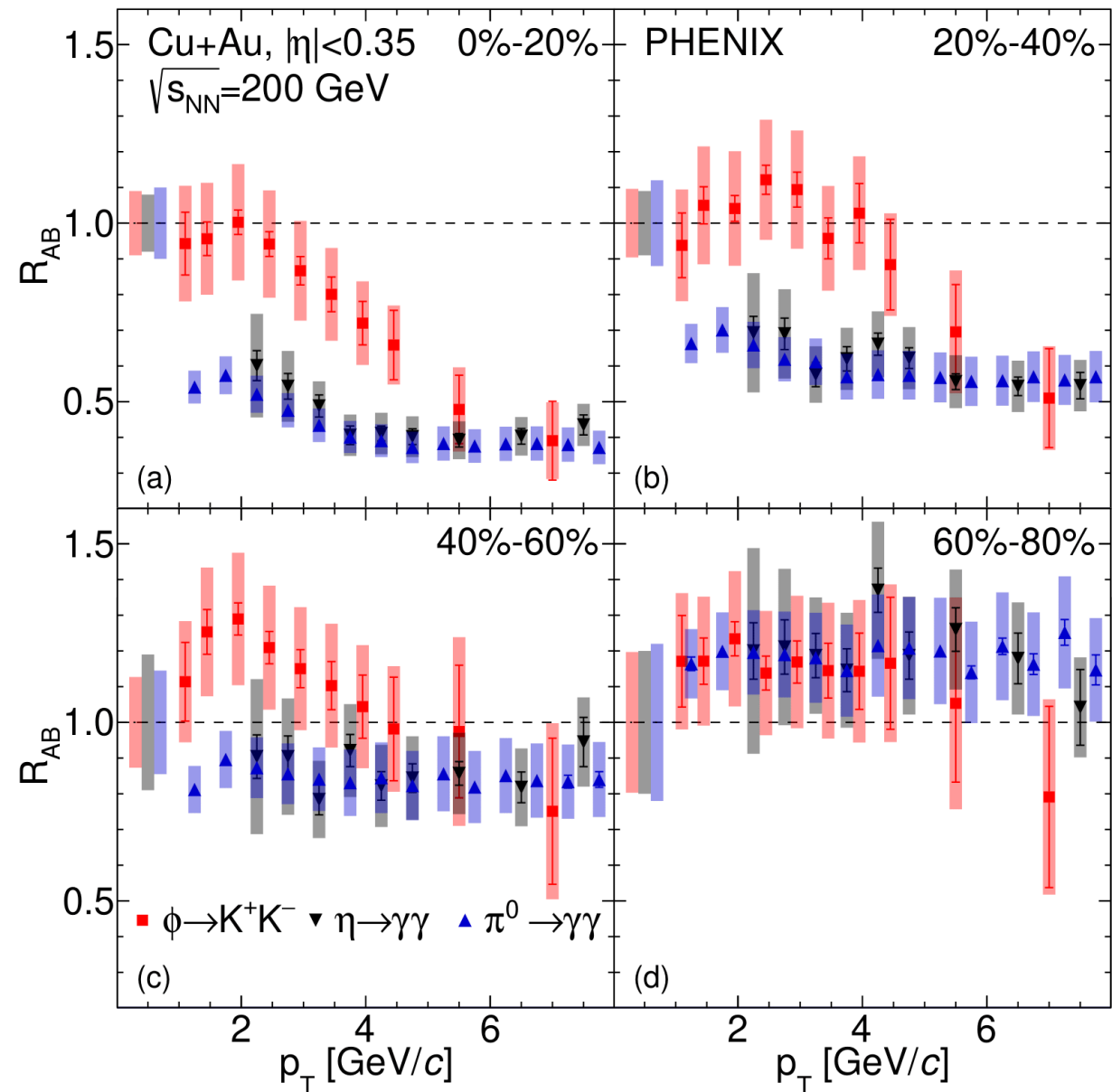
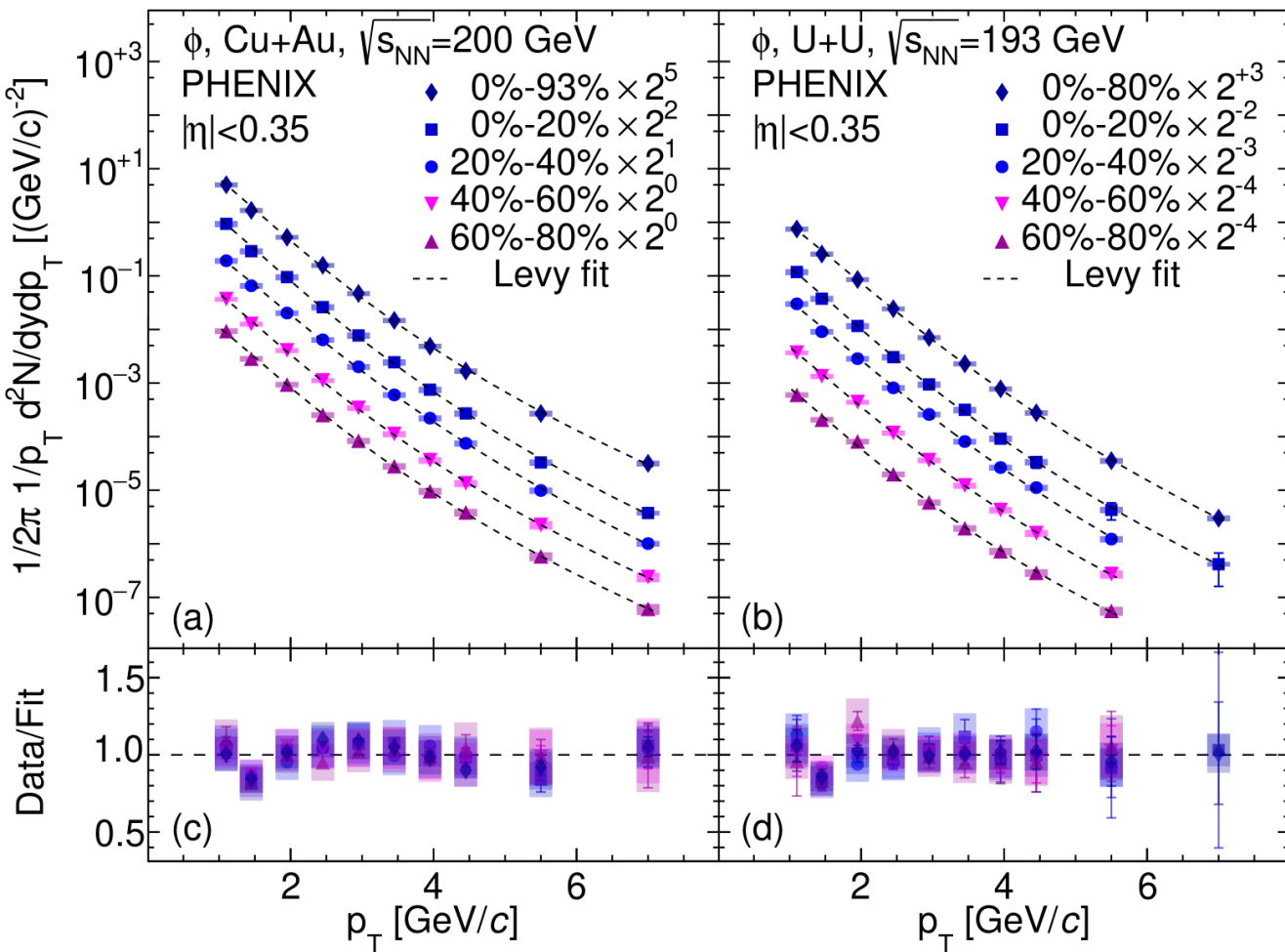


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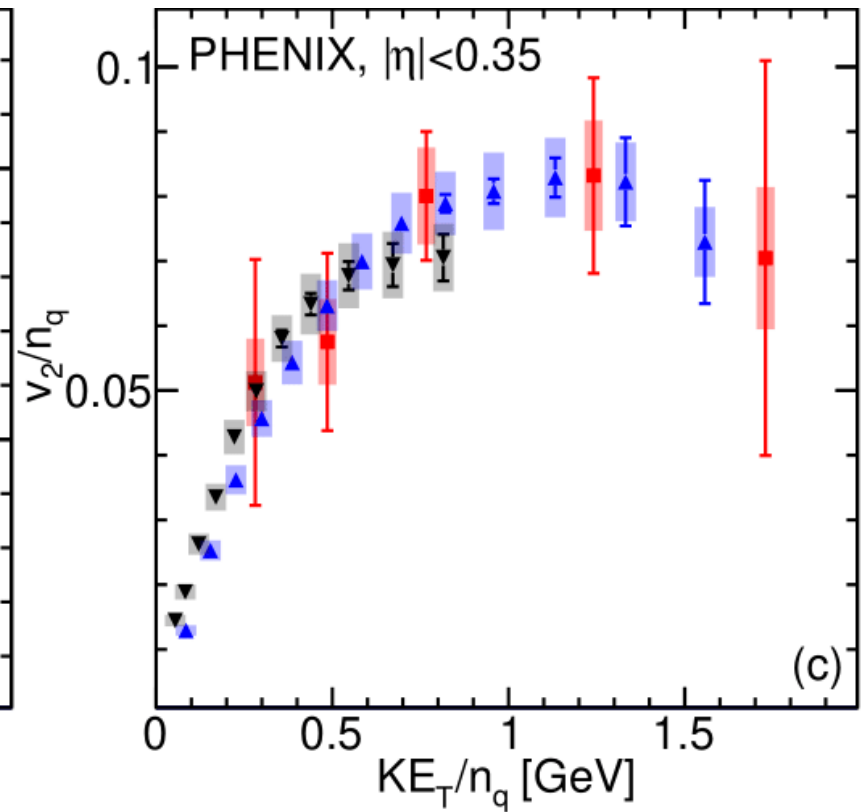
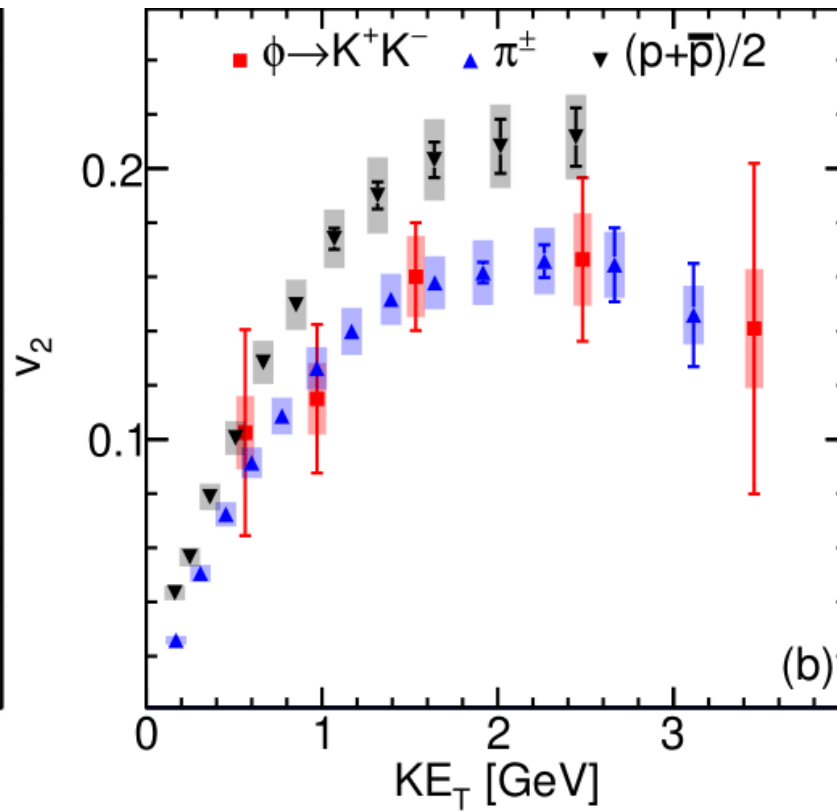
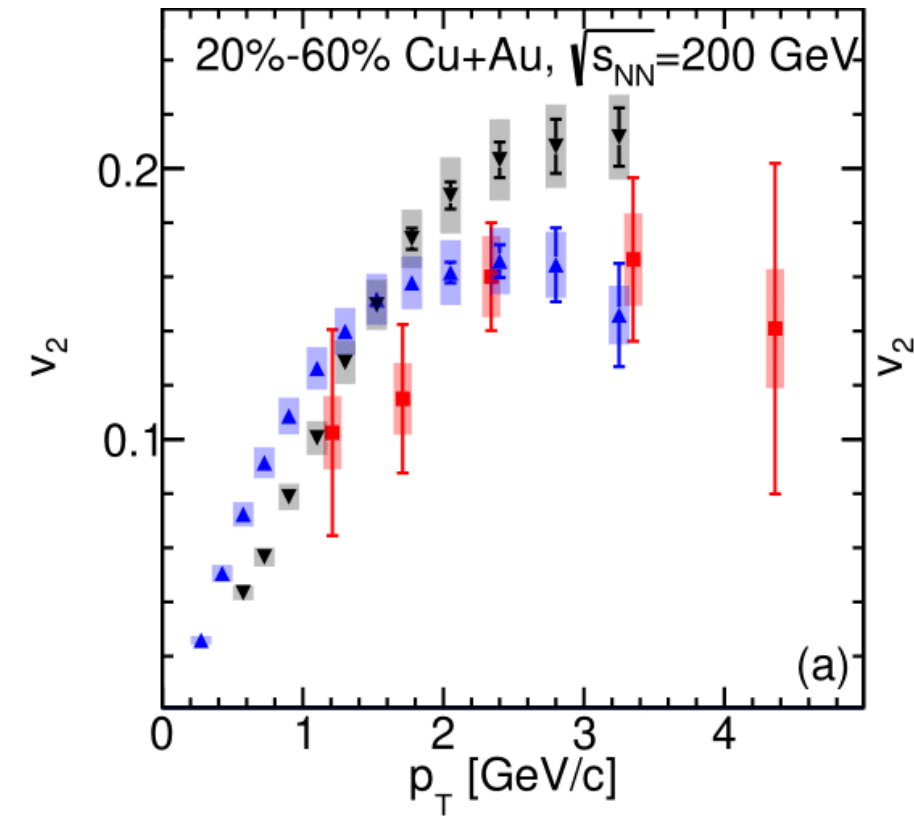


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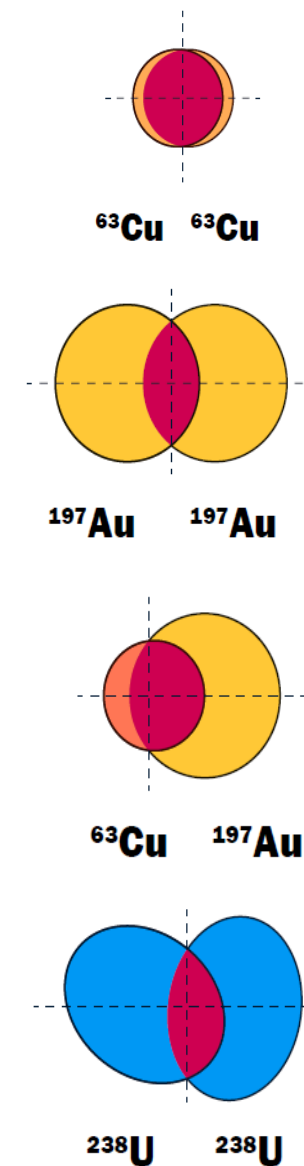
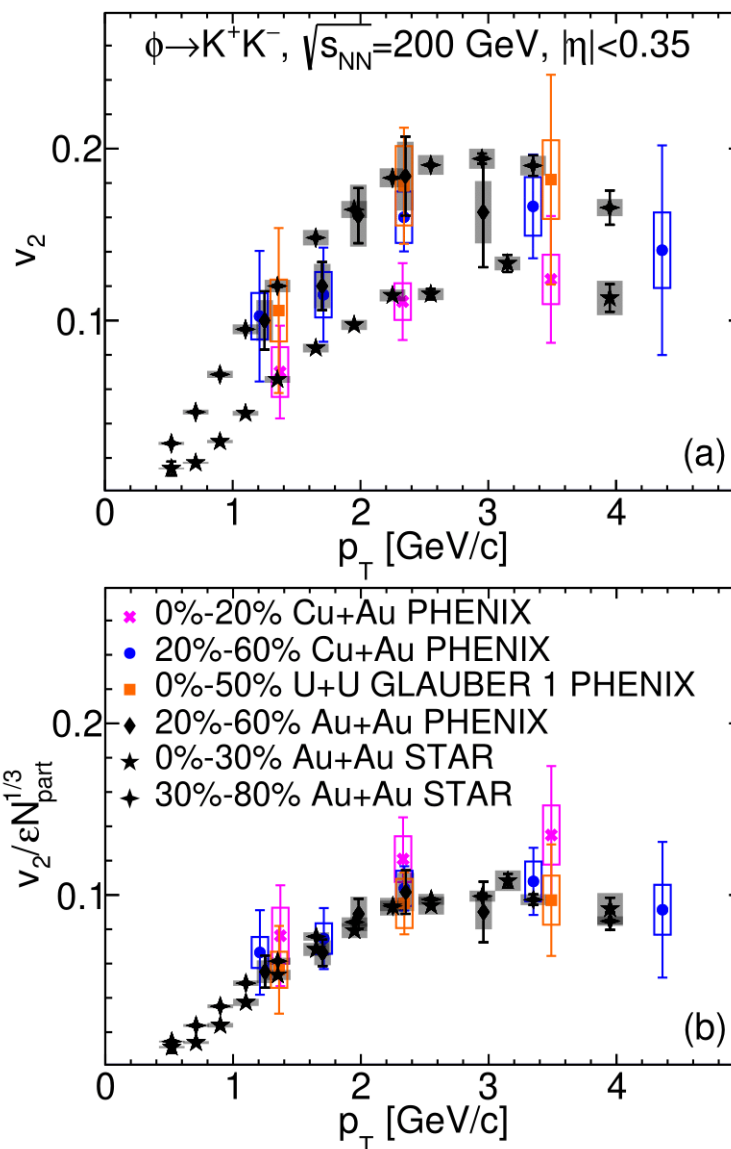
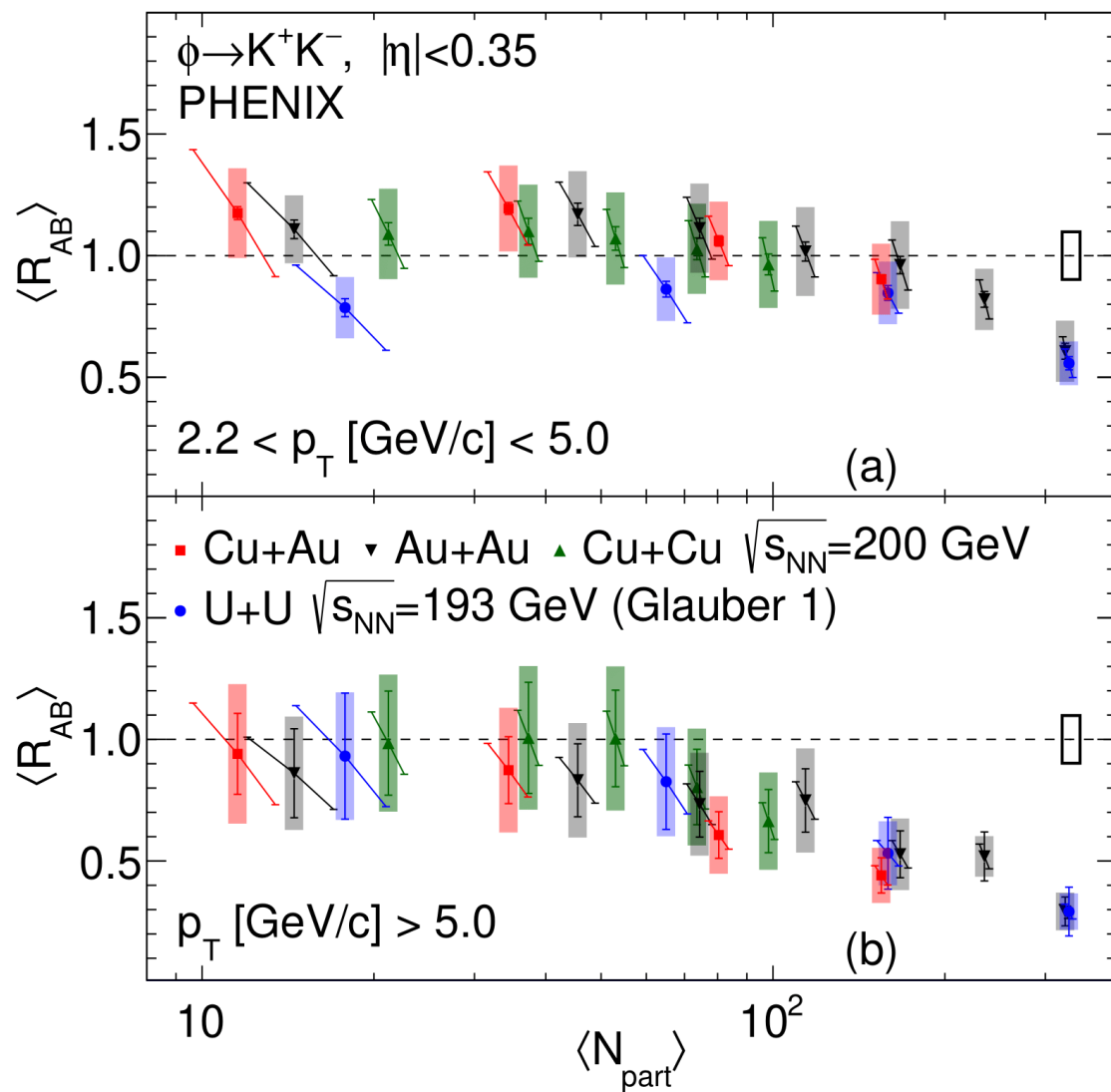




# Elementary particle and high energy physics. Results



# Elementary particle and high energy physics. Results





# Additional research and teaching experience

## Mentoring of student: PHENIX

- ✓  $K^{0*}$   $p_T$  spectra in p+Al, p/Cu/Au+Au & U+U, **novel PID** (preparing publication)
- ✓  $\pi^\pm, K^\pm, p/\bar{p}$   $p_T$  spectra in p+Al,  $^3\text{He}/\text{Cu+Au}$  & U+U (preparing publication)
- ✓ Elliptic flow for  $\pi^0$  in Cu+Au **at high  $p_T$**  (Preliminary)
- ✓ Thermal  $\gamma$ ,  $K^{0*}$ ,  $\eta$ -meson in  $^3\text{He+Au}$ , **extended  $p_T$  reach** (in-process)

## Additional research experience

- ✓ Proton production measurements in Cu+Au
- ✓ Study of fast neutron scintillation detectors based on ZnS:Ag
- ✓ Ultracold neutron researches
- ✓ Internal reviewer of the article on two-pion Bose-Einstein correlations

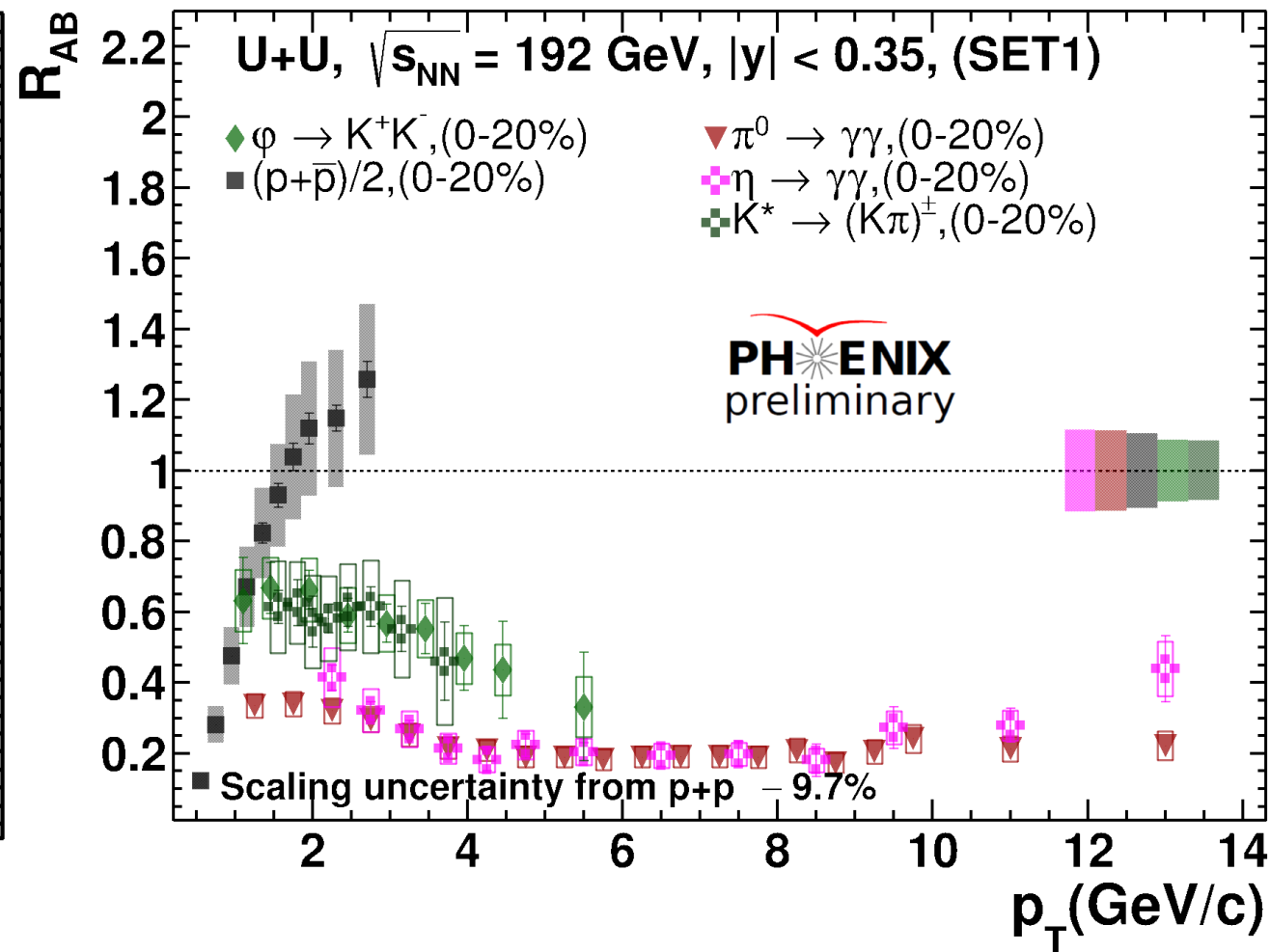
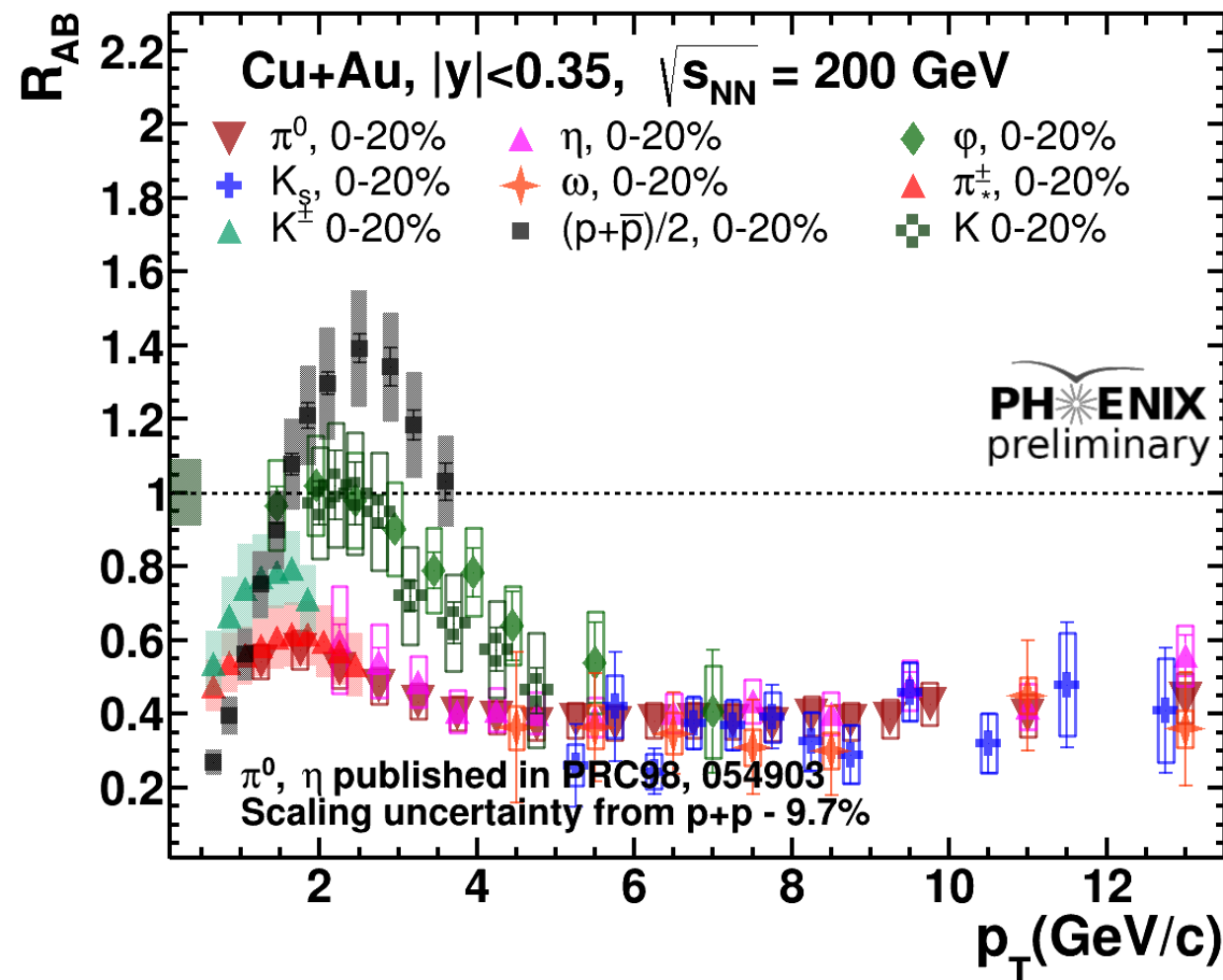
## Mentoring of student: SPD and else

- Pythia+nPDF calculations (undergrad thesis, preparing paper)
- quark-diquark model for DIS and p+p (undergrad thesis)
- ML for extrapolation geometry parameters and DIS (article in review)
- ML for track reconstruction (undergrad thesis))

## Teaching experience

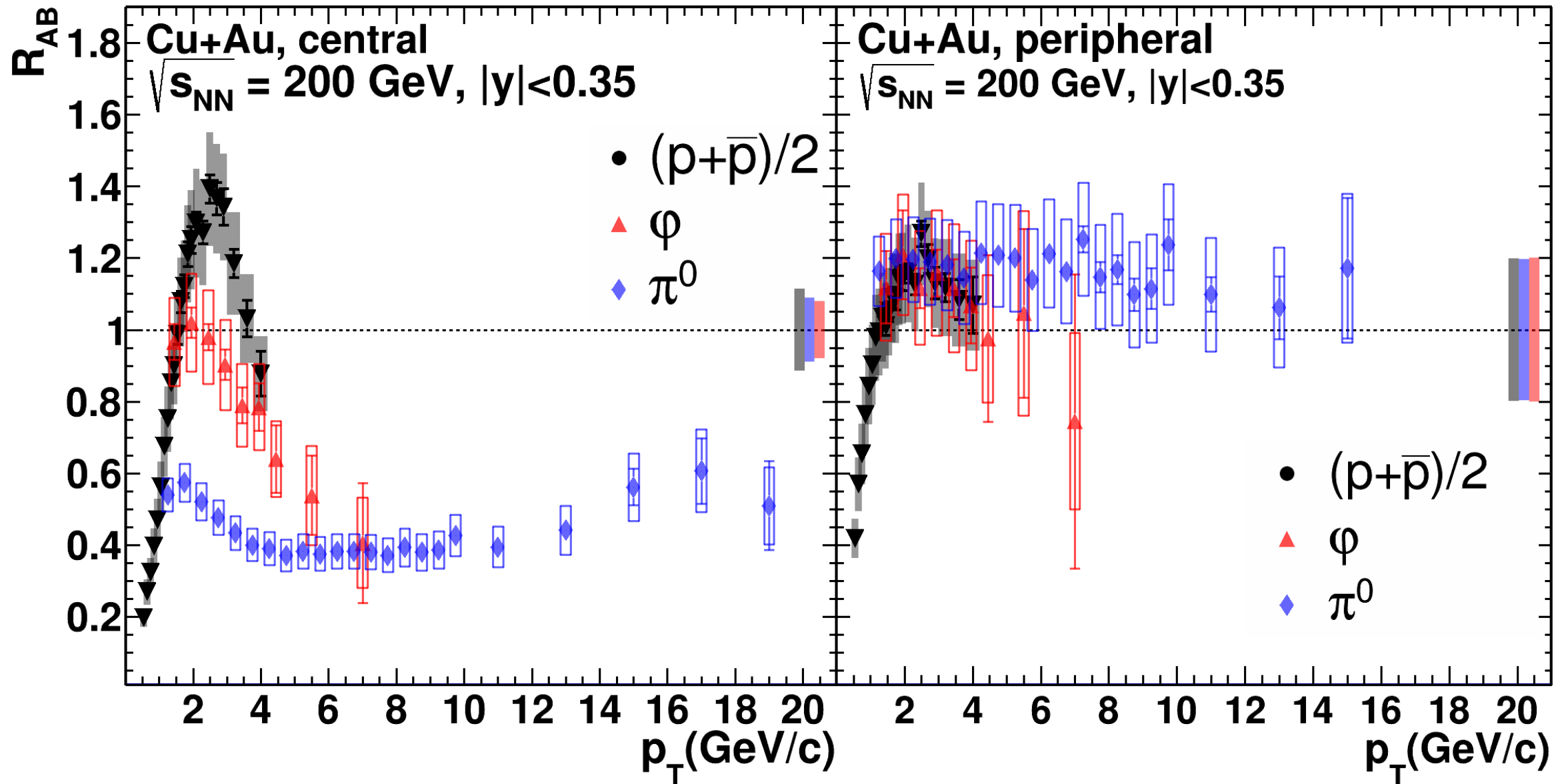
- **Lectures**: Elementary particle physics (6-10 sem.), neutron and neutrino physics (10 sem.)
- **Practices**: high energy physics packages, elementary particle physics
- **Classbook**: Lattice QCD.

# Elementary particle and high energy physics. Results

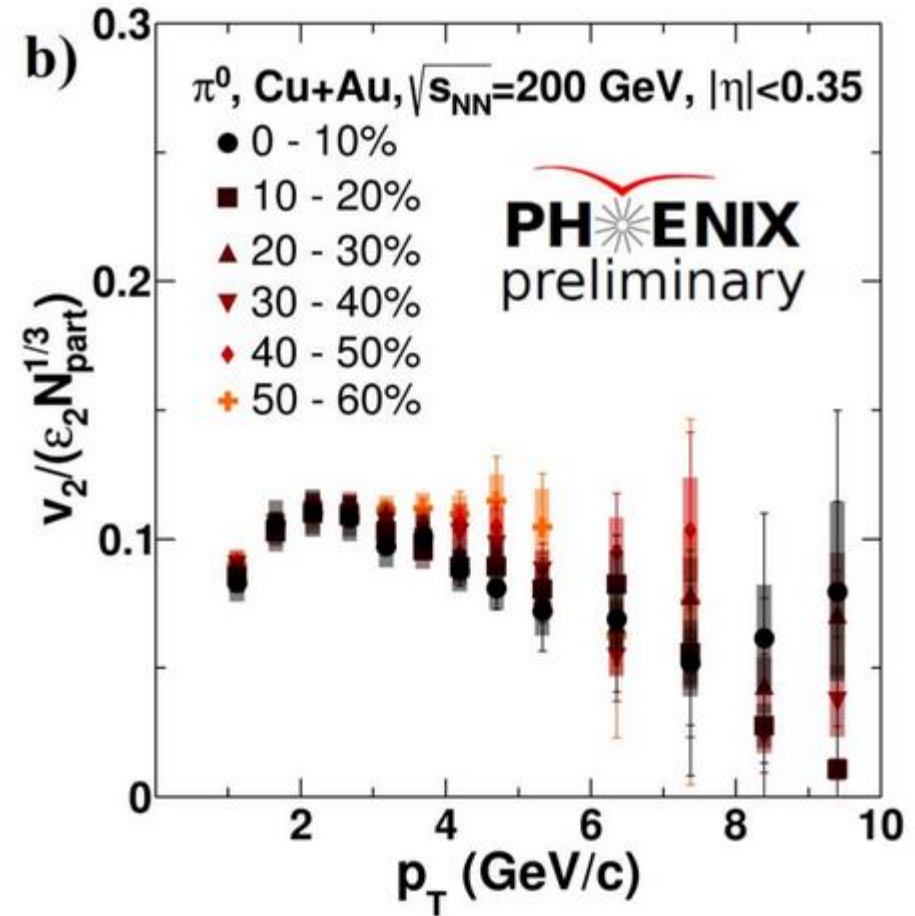
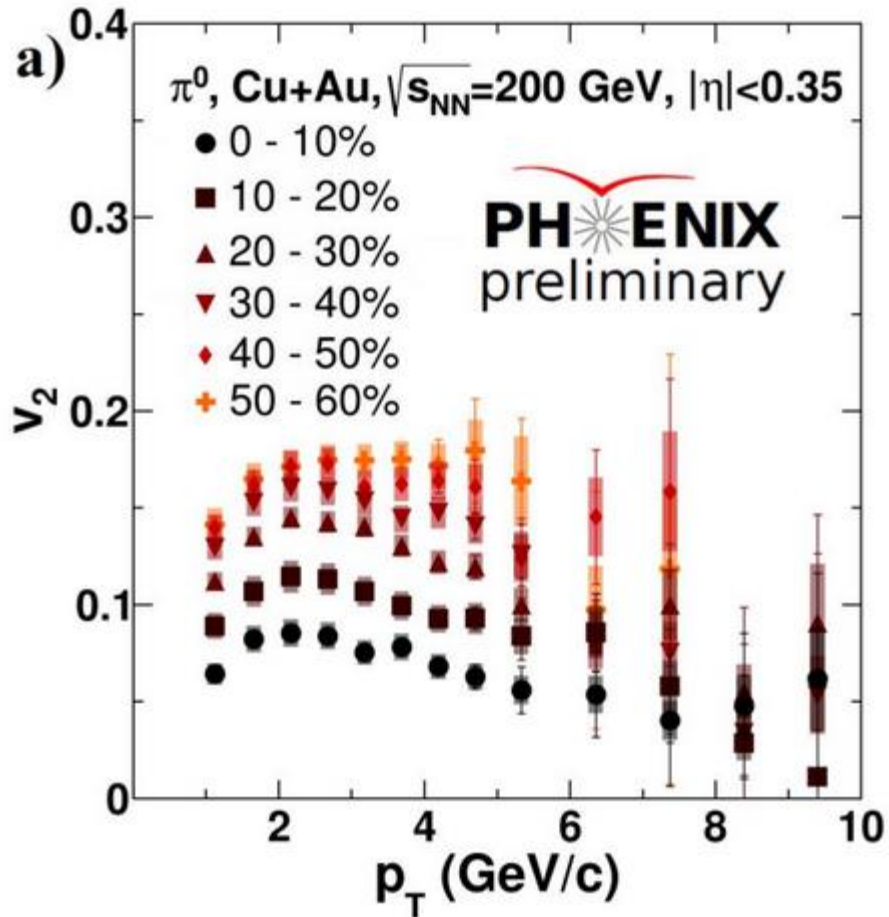




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## **1. Introduction to Elementary particles**

- a. Review of standard model
- b. Scattering theory
- c. Symmetries and Quark Model

## **2. Relativistic quantum mechanics**

- a. Why is it the way it is?
- b. Relativistic wave equations

## **3. Why do we need fields?**

- a. Causality and multiparticles
- b. The Bohm-Aharonov effect
- c. Abelian and Non-Abelian FT

## **4. Quantum fields**

- a. Free fields
- b. Interaction fields
- c. Feynman diagrams
- d. QED
- e. Higher Order Corrections
- f. Application

## **5. Path integral (Functionals)**

- a. Path integral in NRQM
- b. Path integral in QFT
- c. Non-Abelian gauge theories
- d. Ghosts, QCD Feynman Rules
- e. Ward and ST Identities

## **6. Renormalization**

- a. Common principles
- b. QED
- c. QCD and Electroweak

## **7. QCD application**

- a. Parton model
- b. DGLAP
- c. Spin structure of nucleons
- d. QCD on lattice
- e. Low-x physics

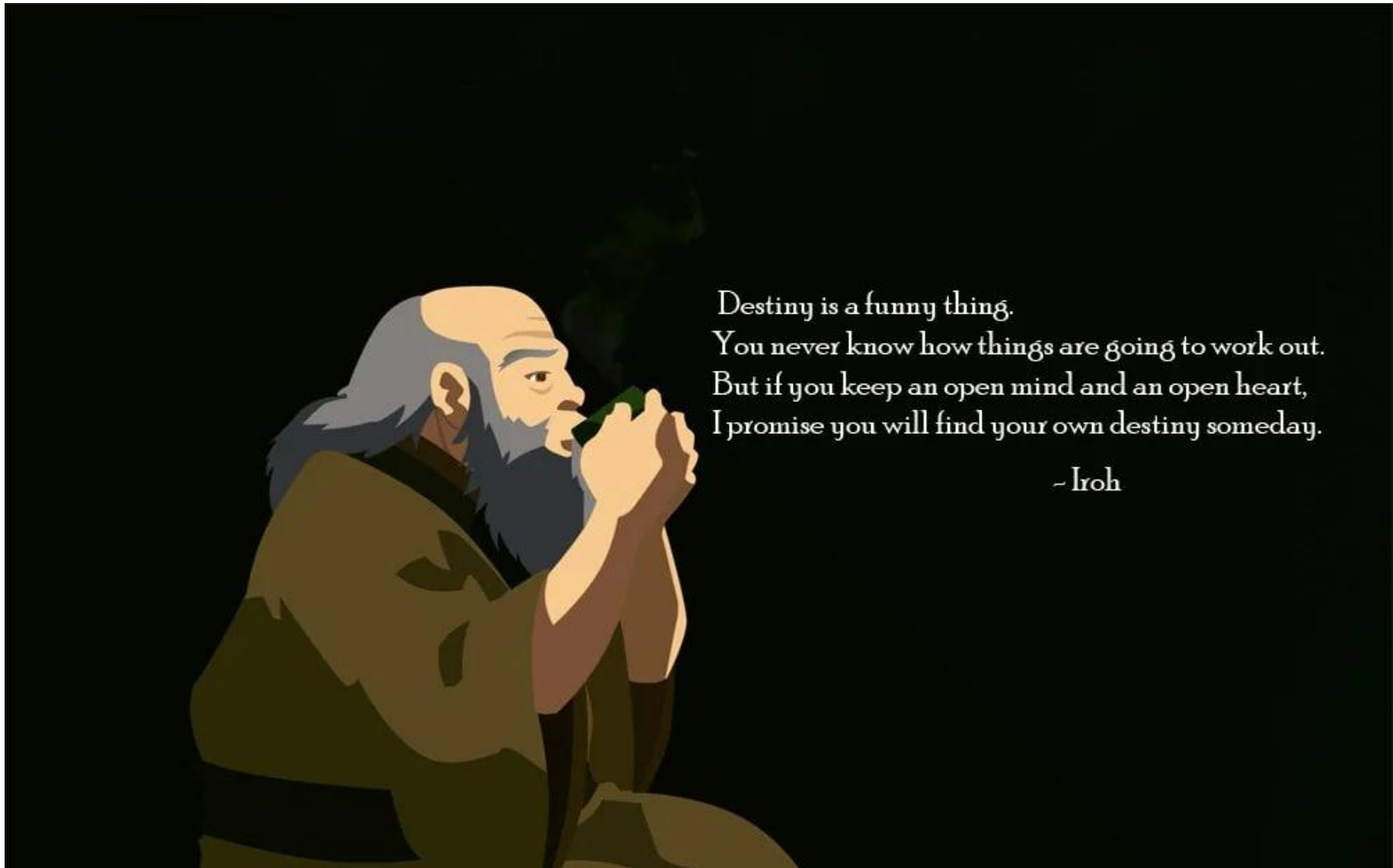
## **8. Standard Model and beyond**

After SPB

IN LAL WE TRUST!!!







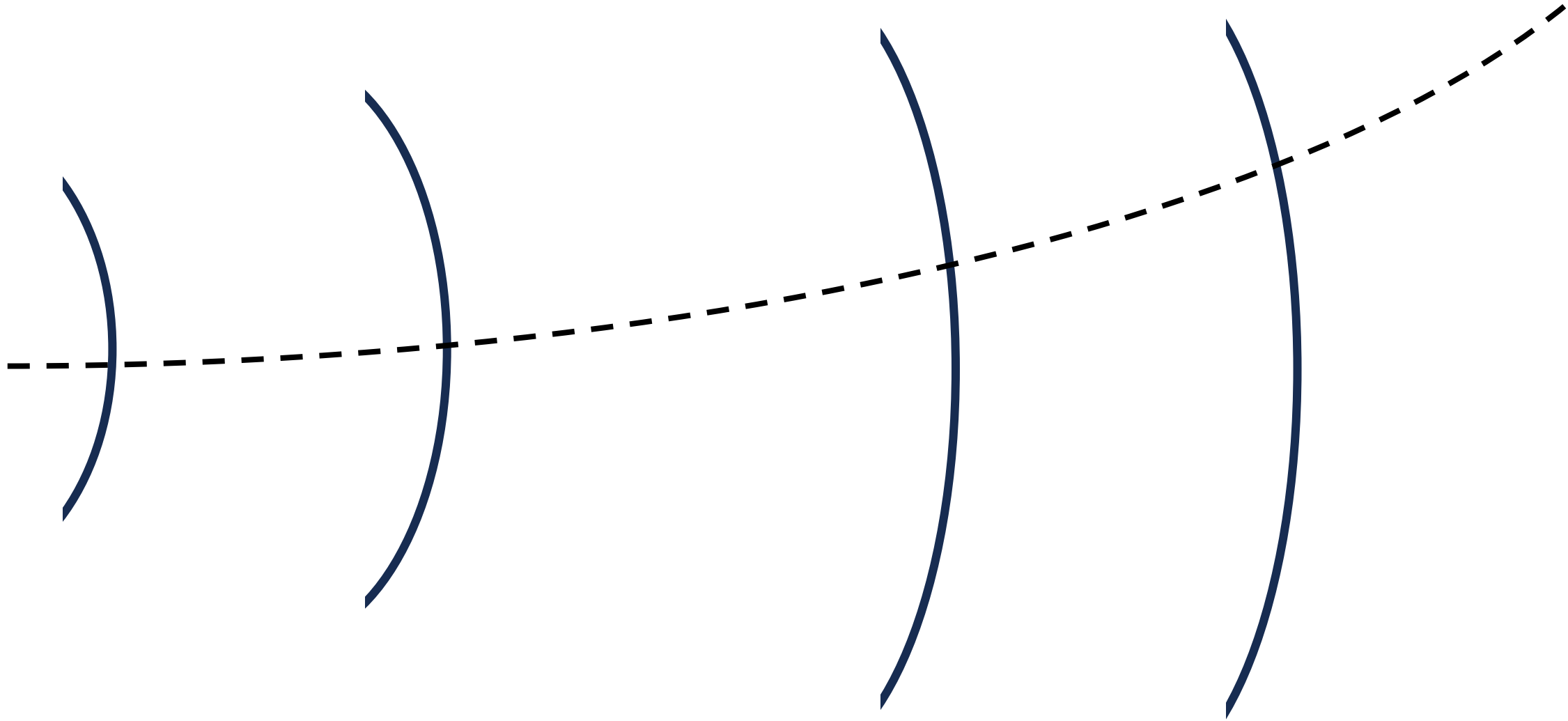
Destiny is a funny thing.  
You never know how things are going to work out.  
But if you keep an open mind and an open heart,  
I promise you will find your own destiny someday.

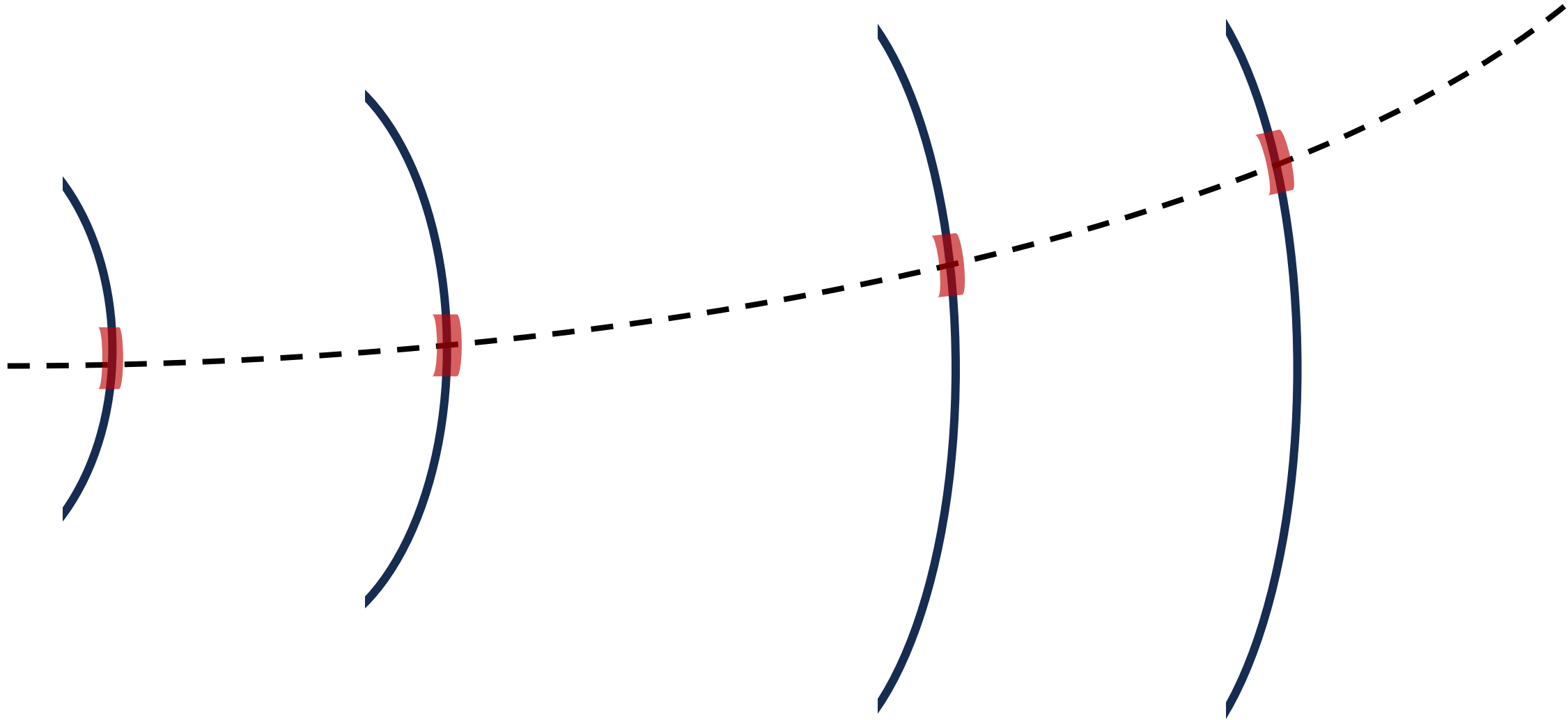
~ Iroh



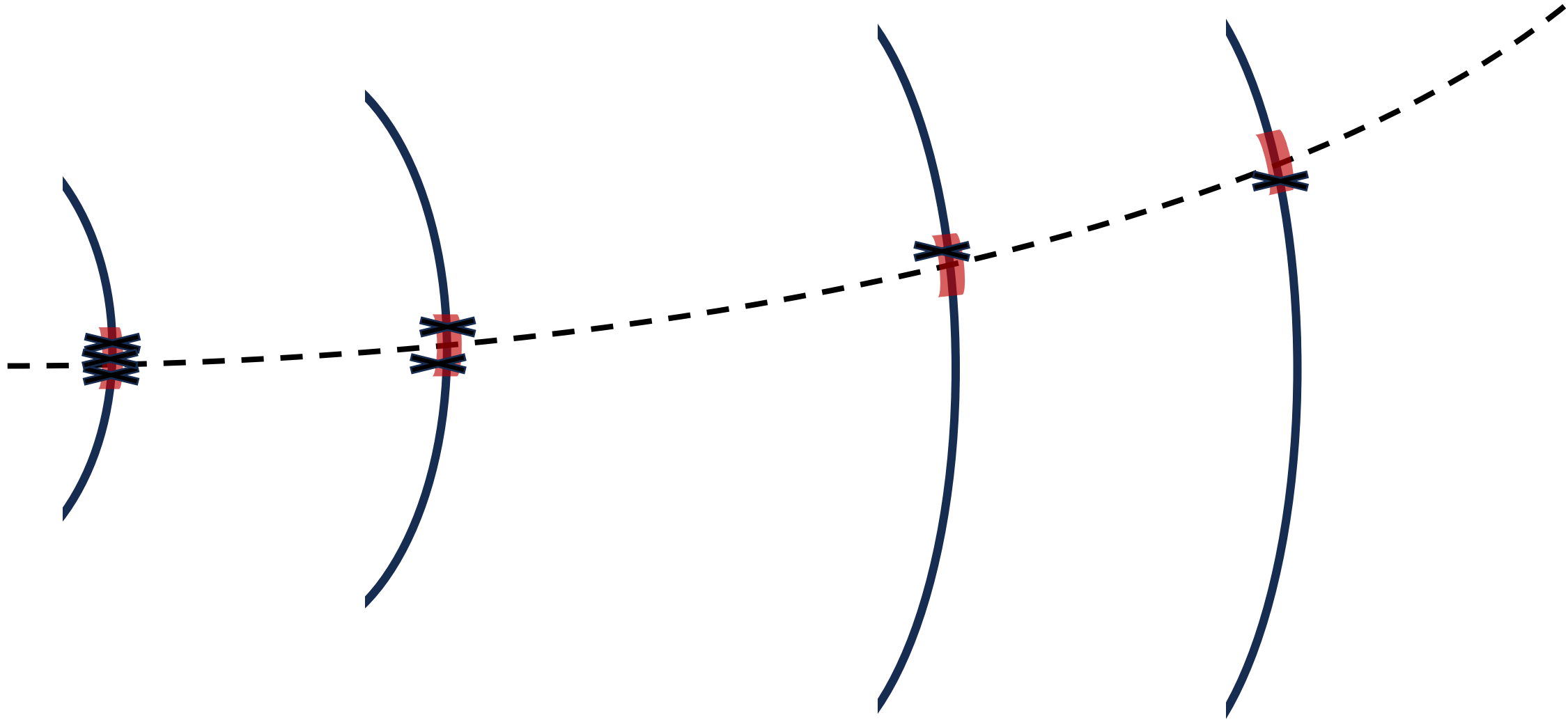


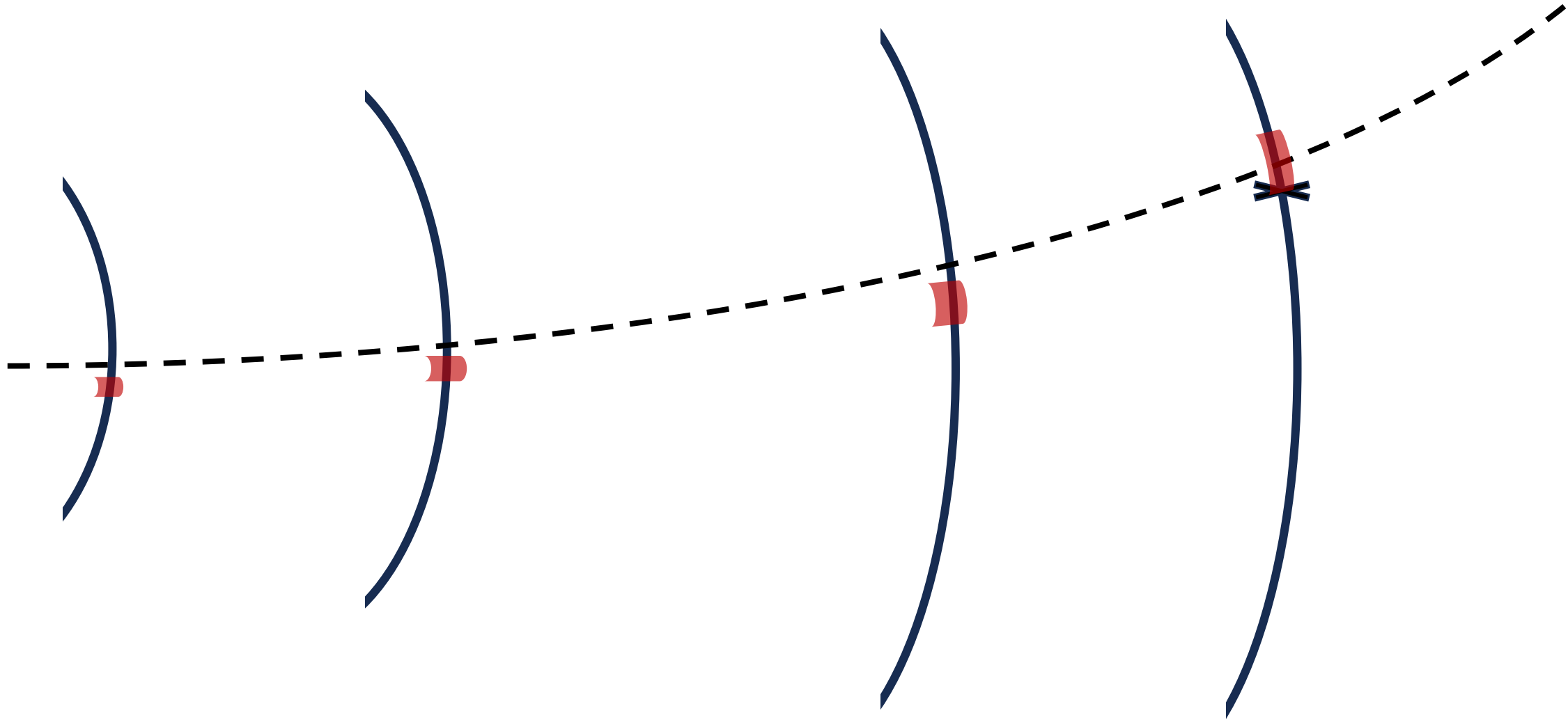






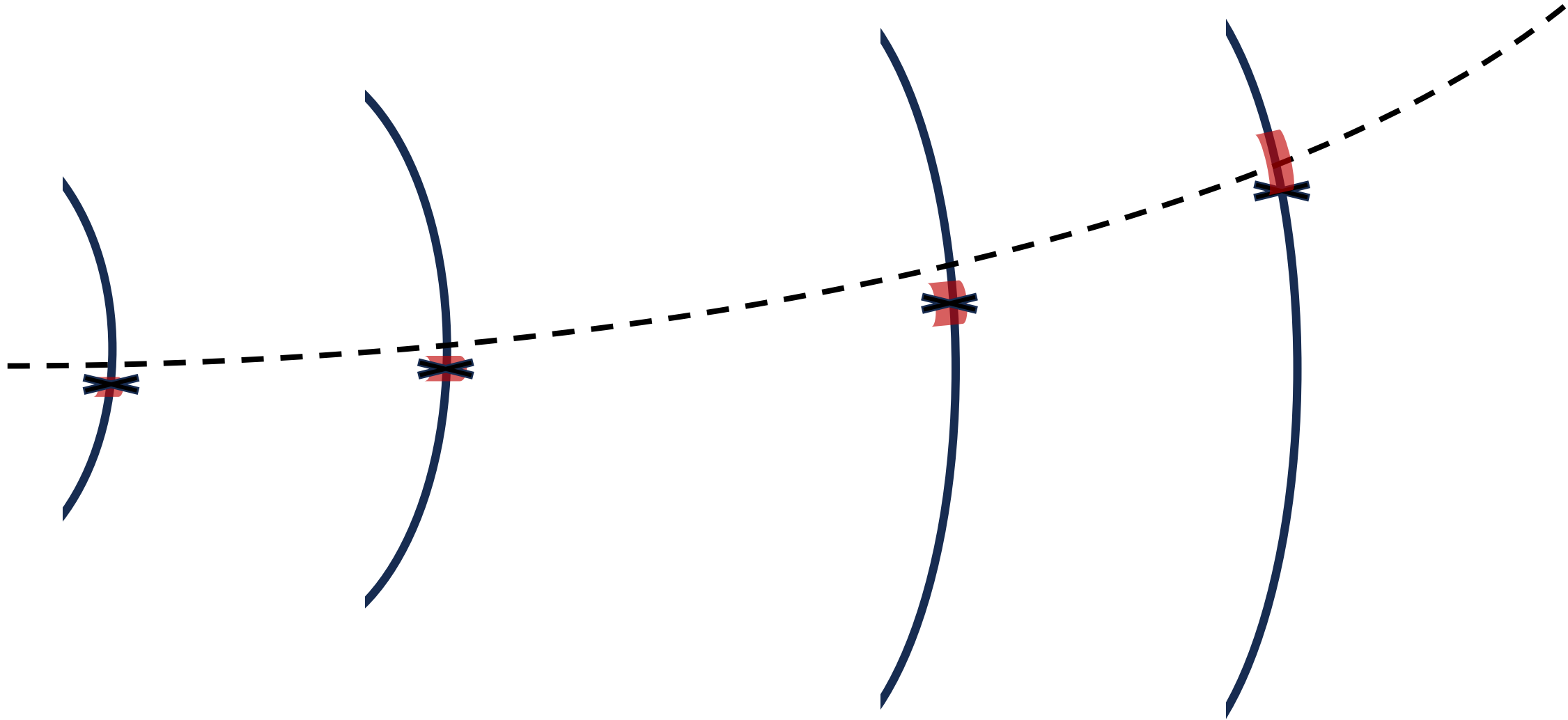




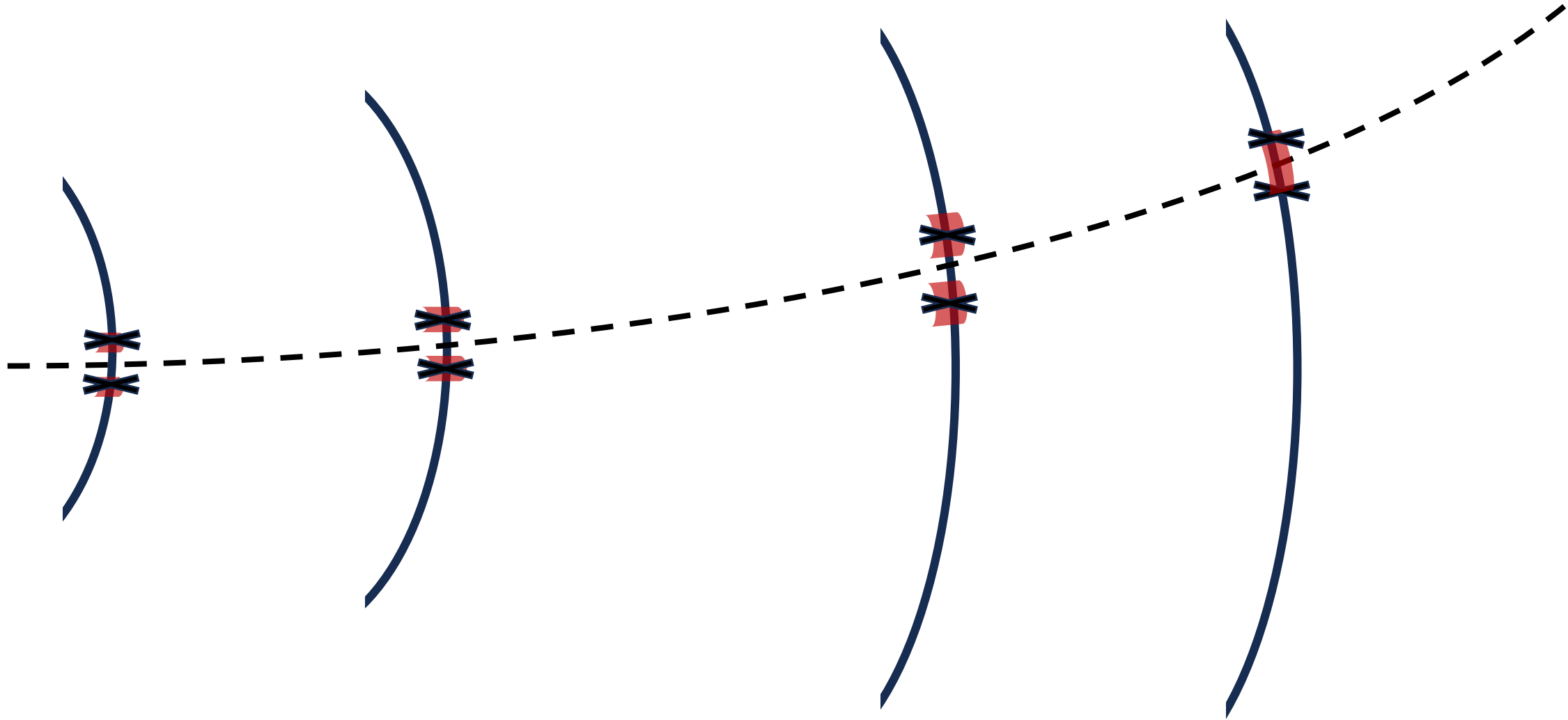




# My New Research

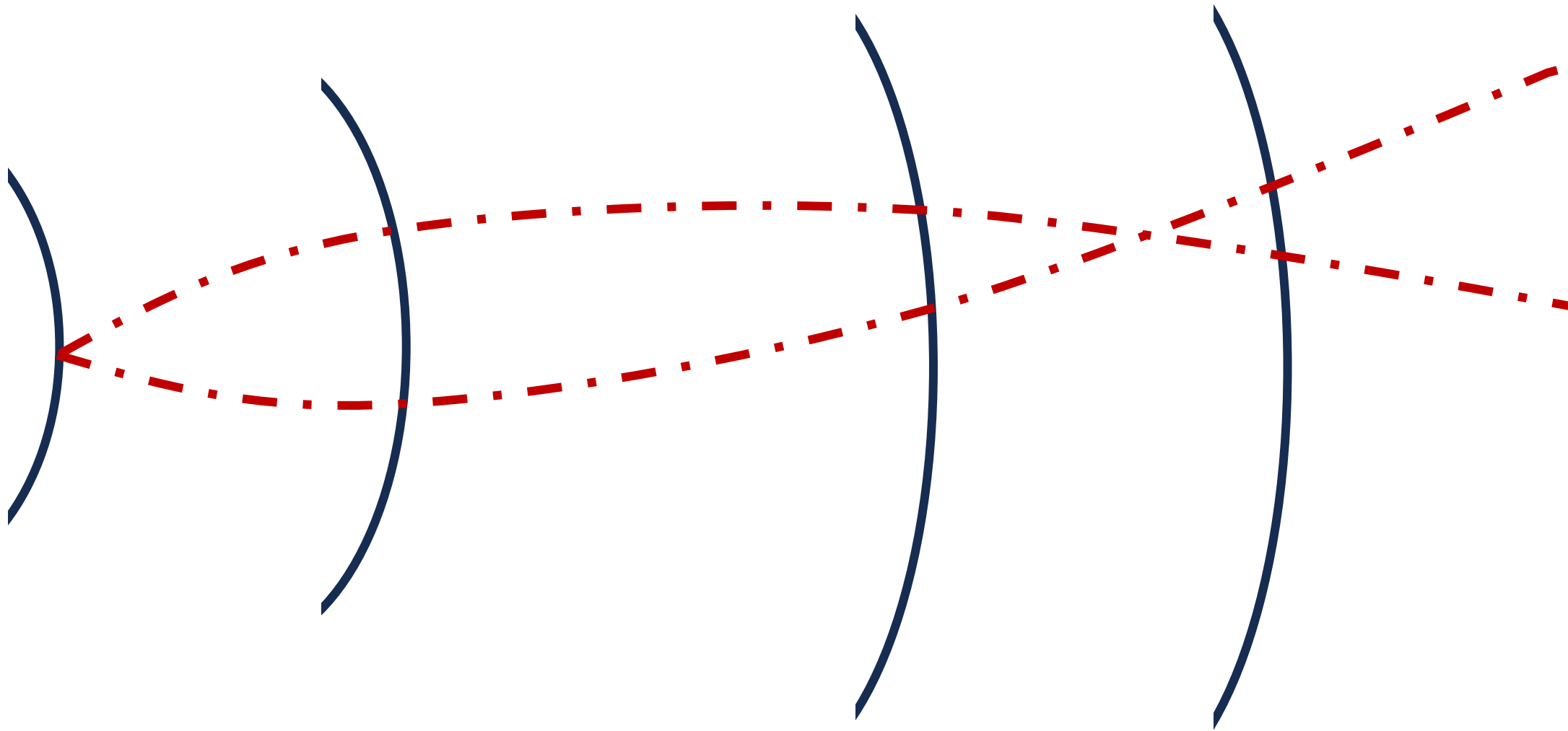


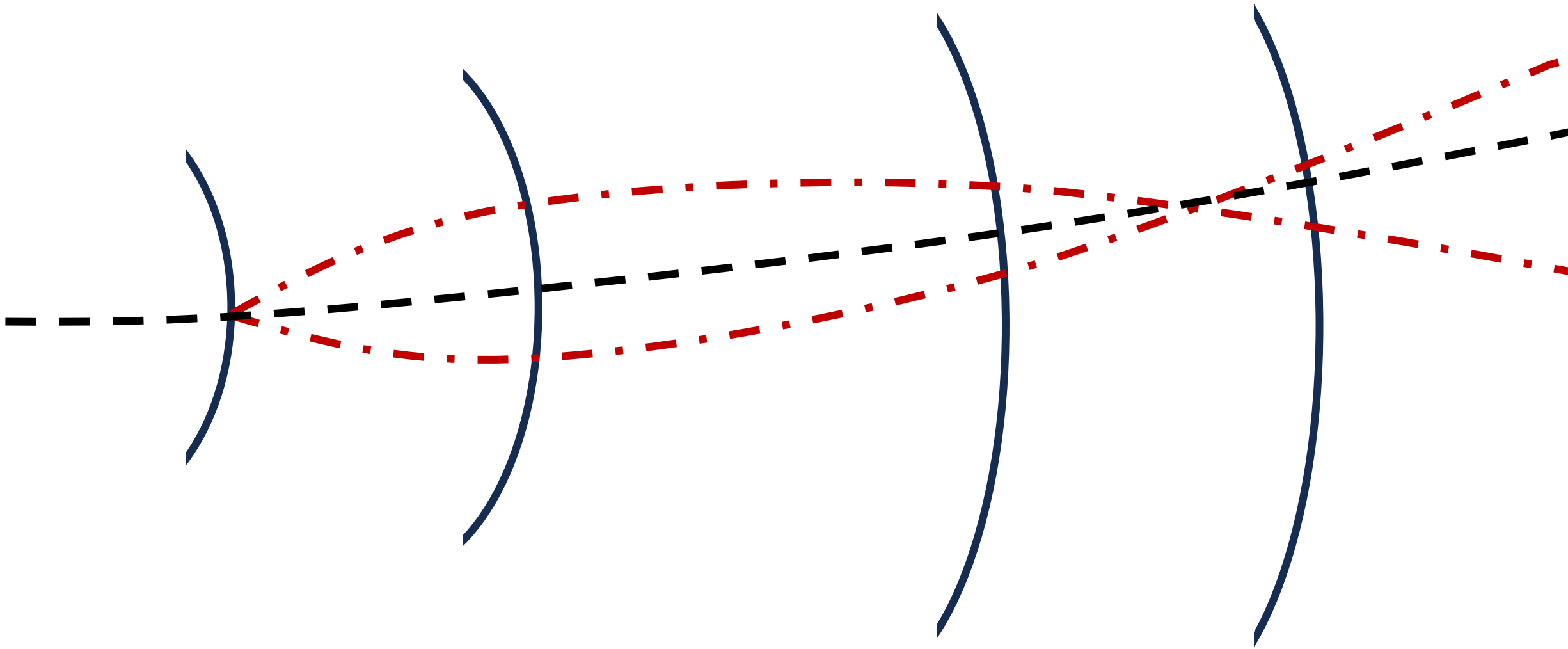
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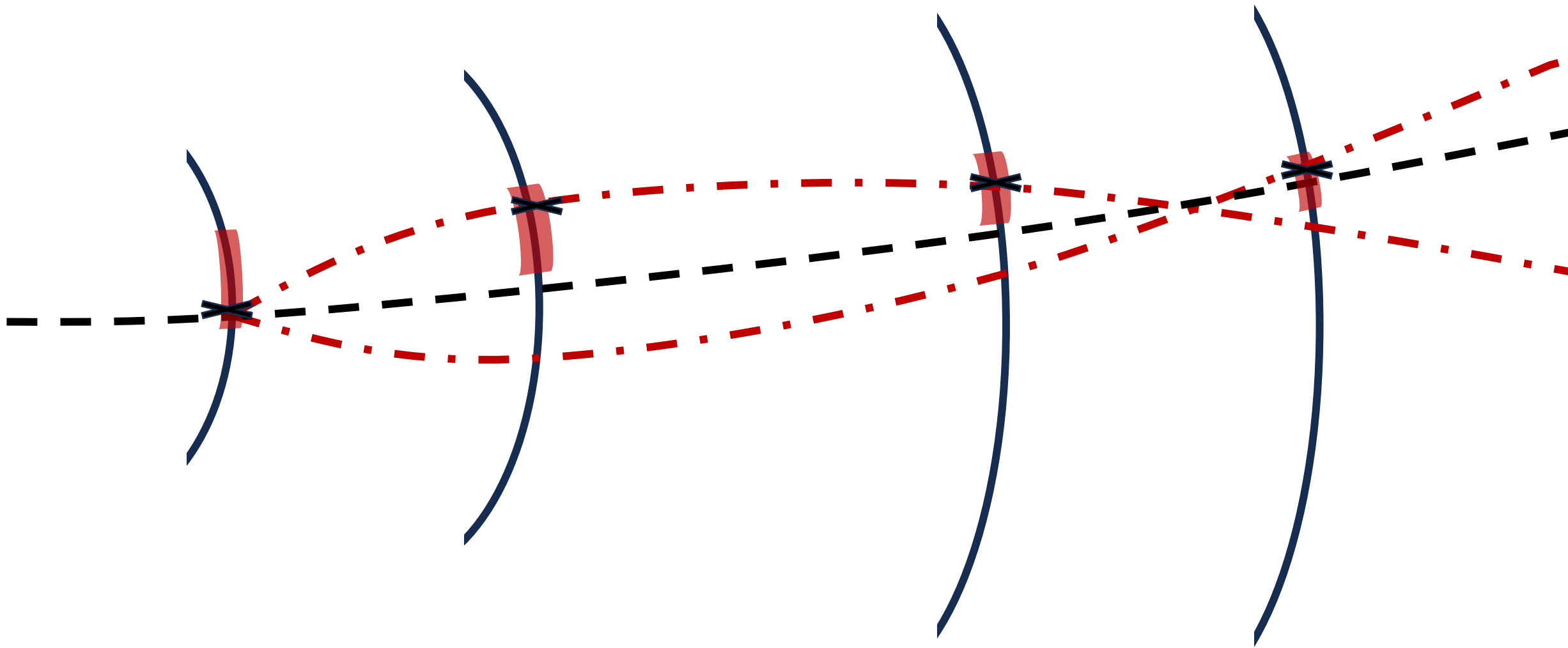


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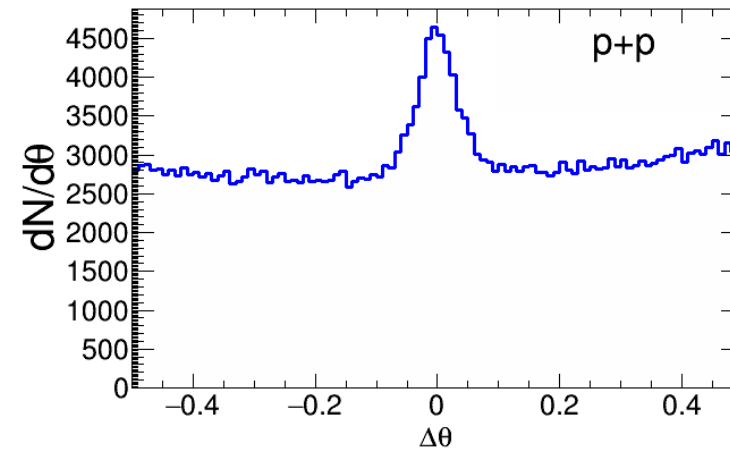
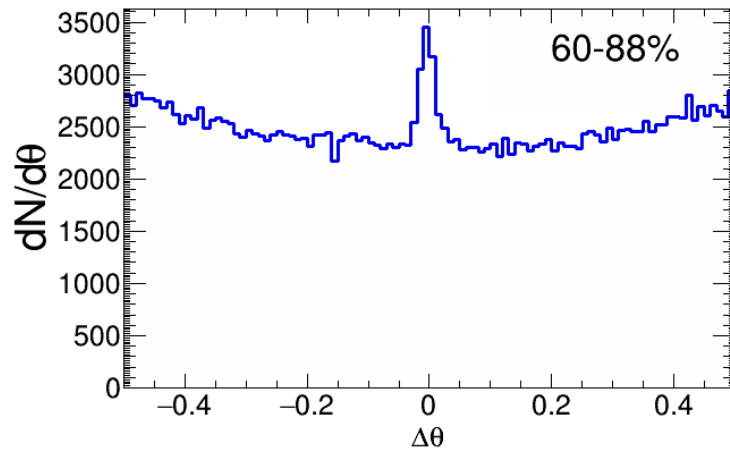
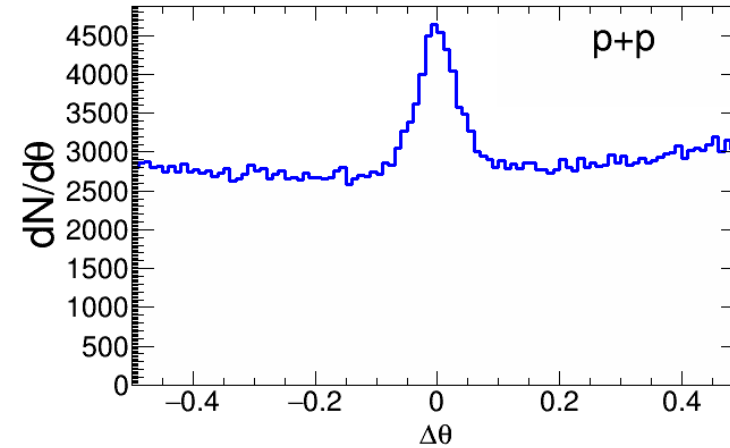
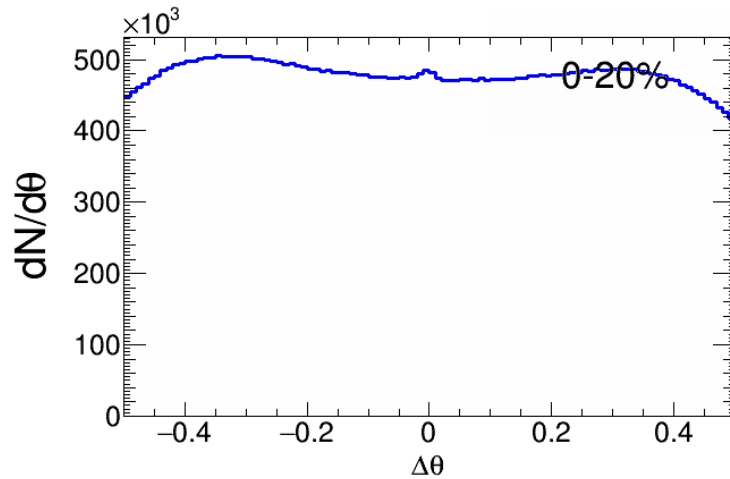




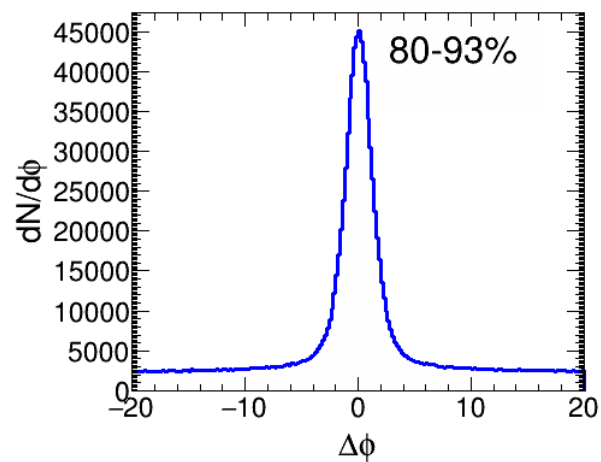
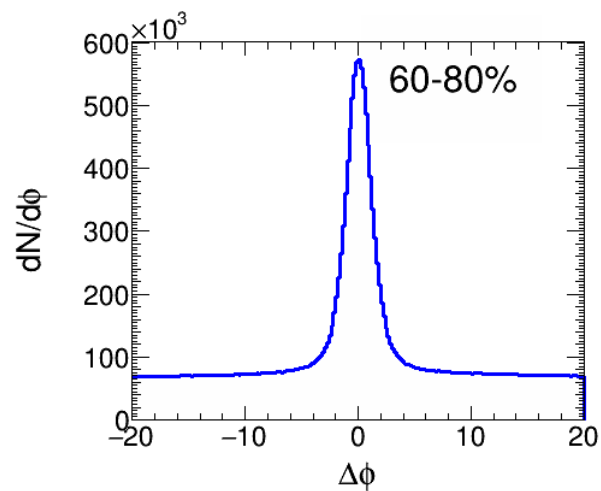
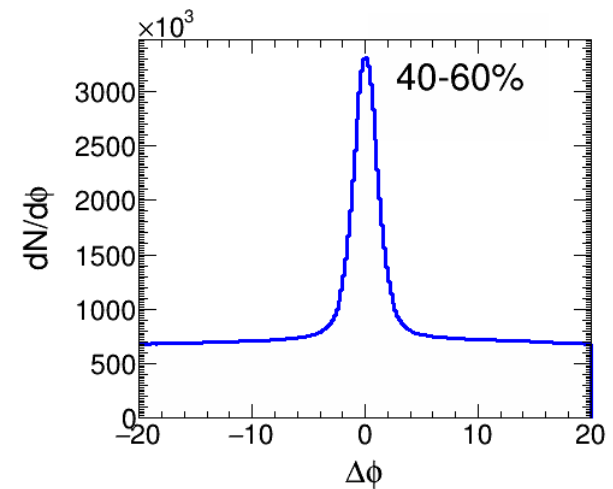
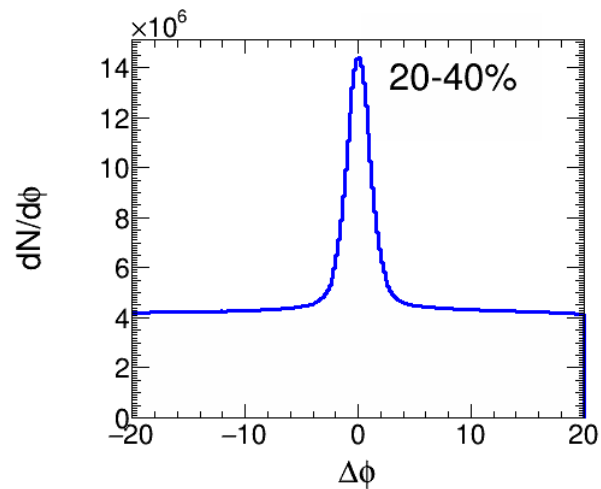
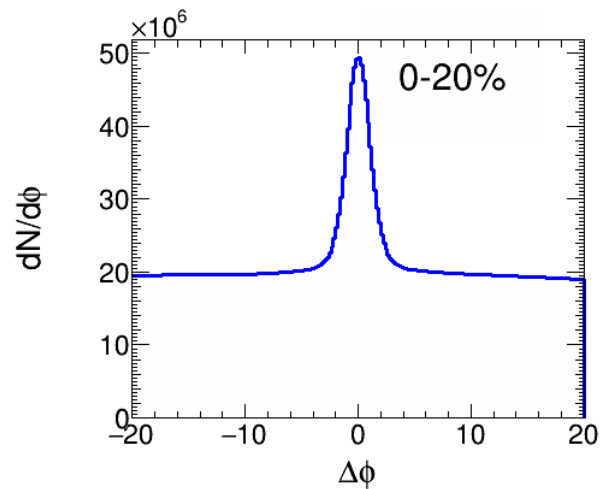




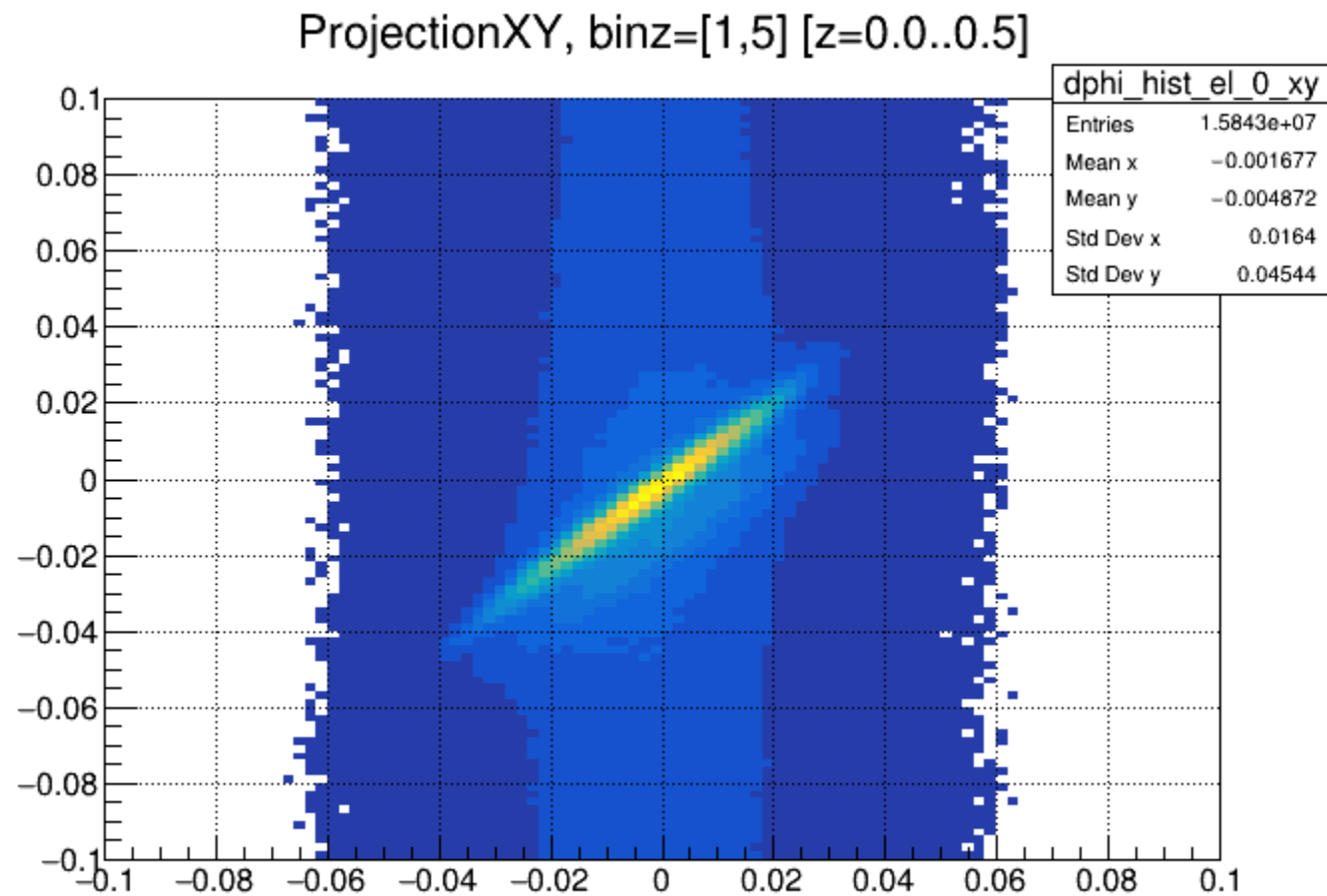
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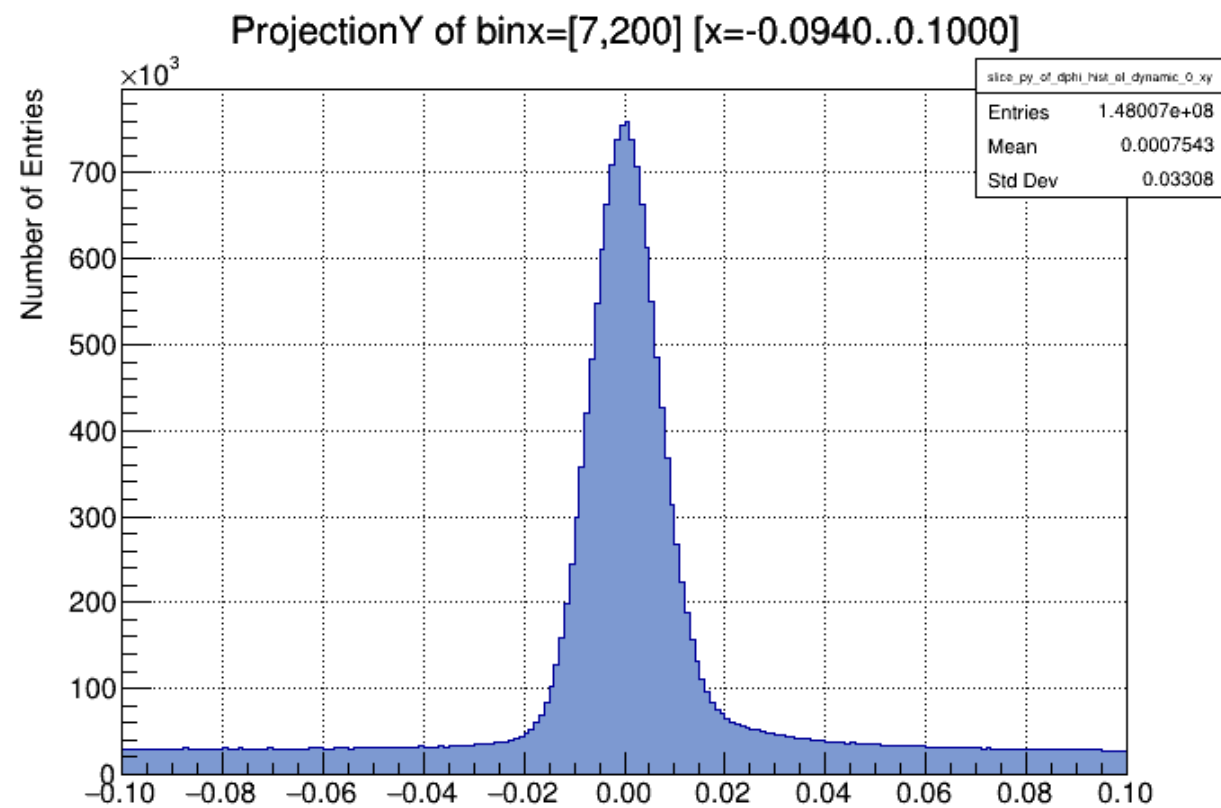
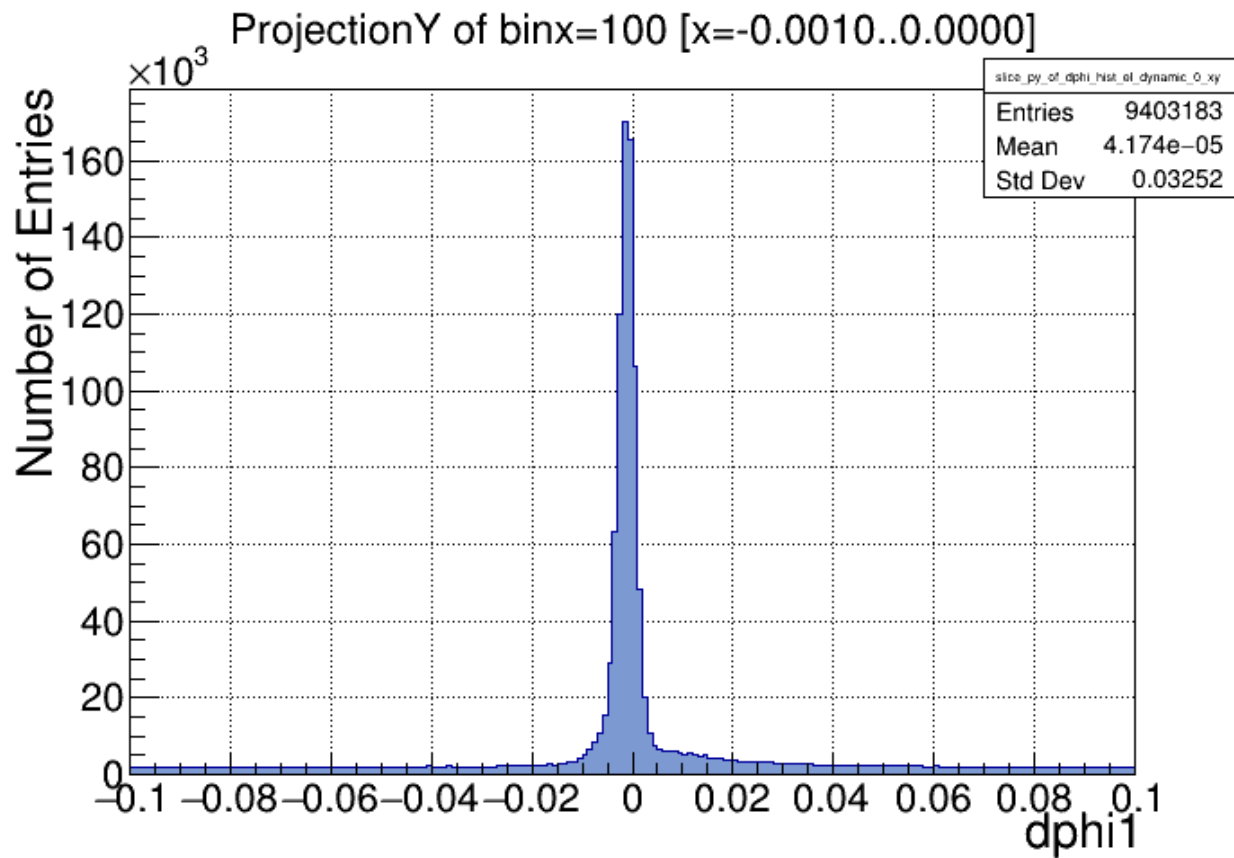
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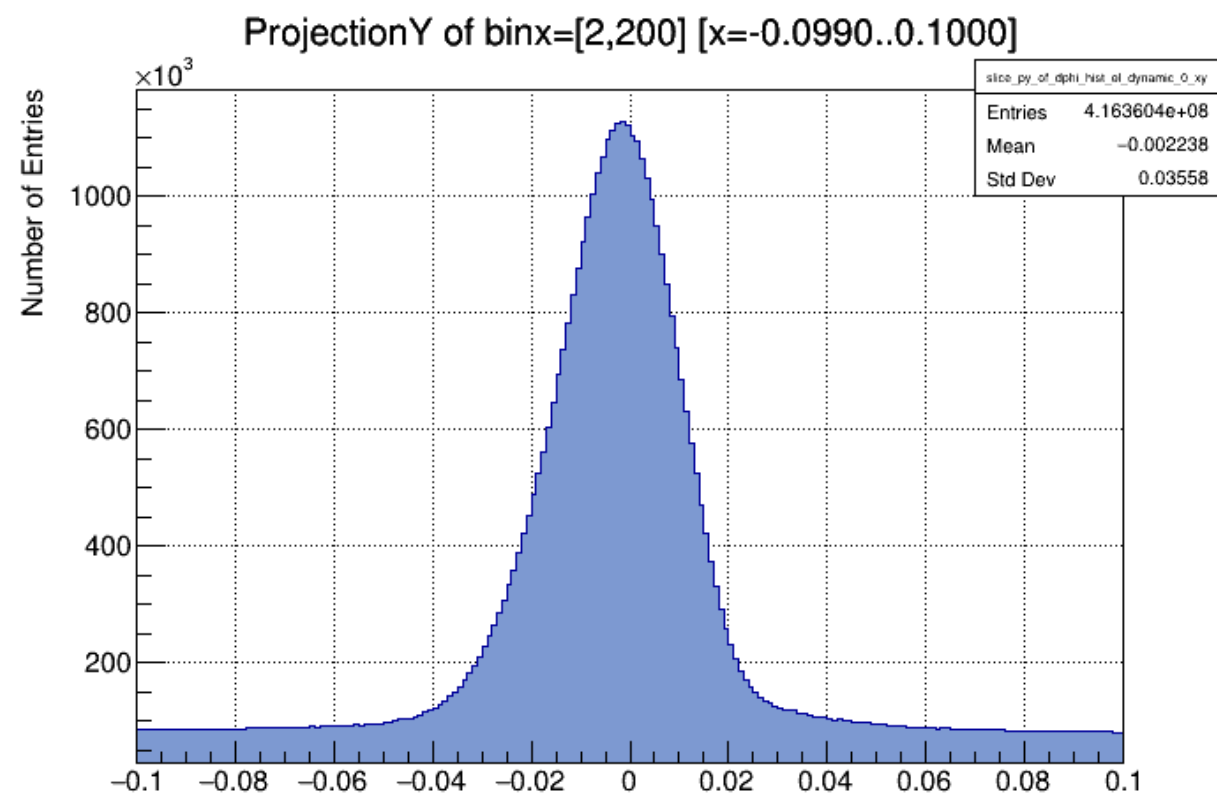
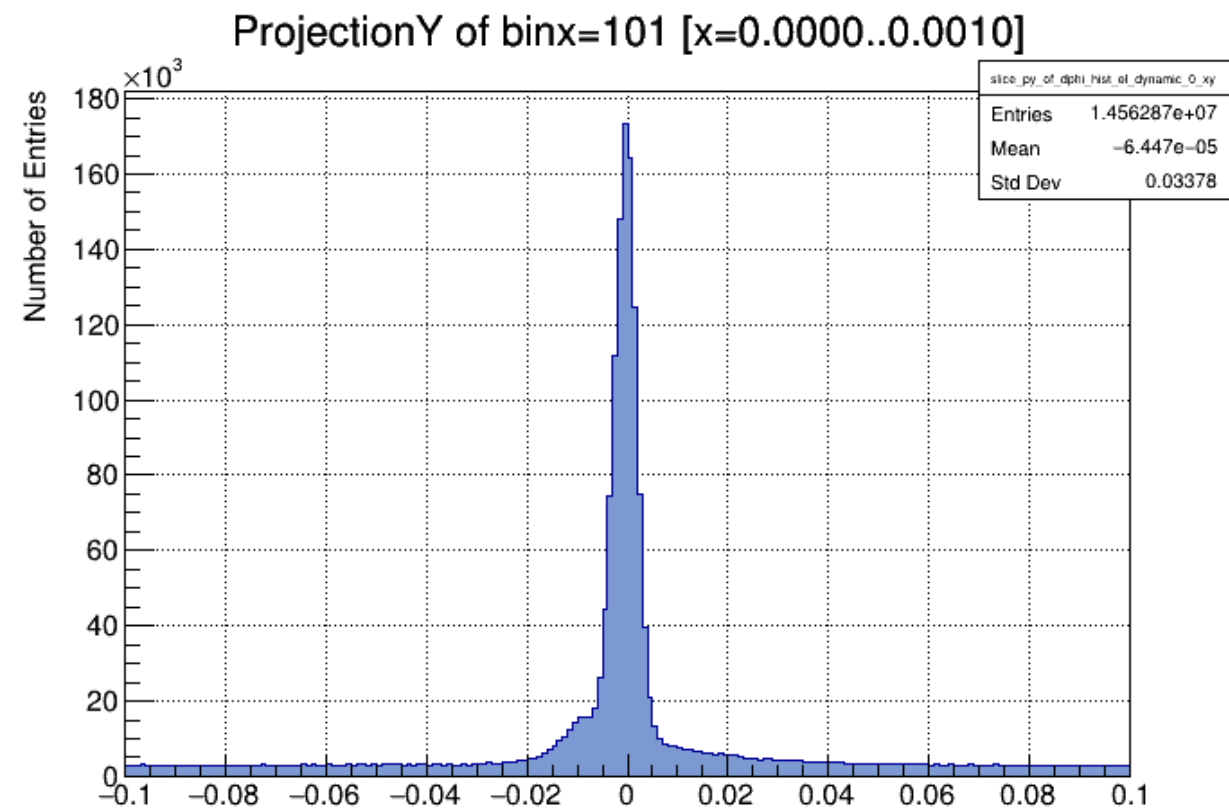




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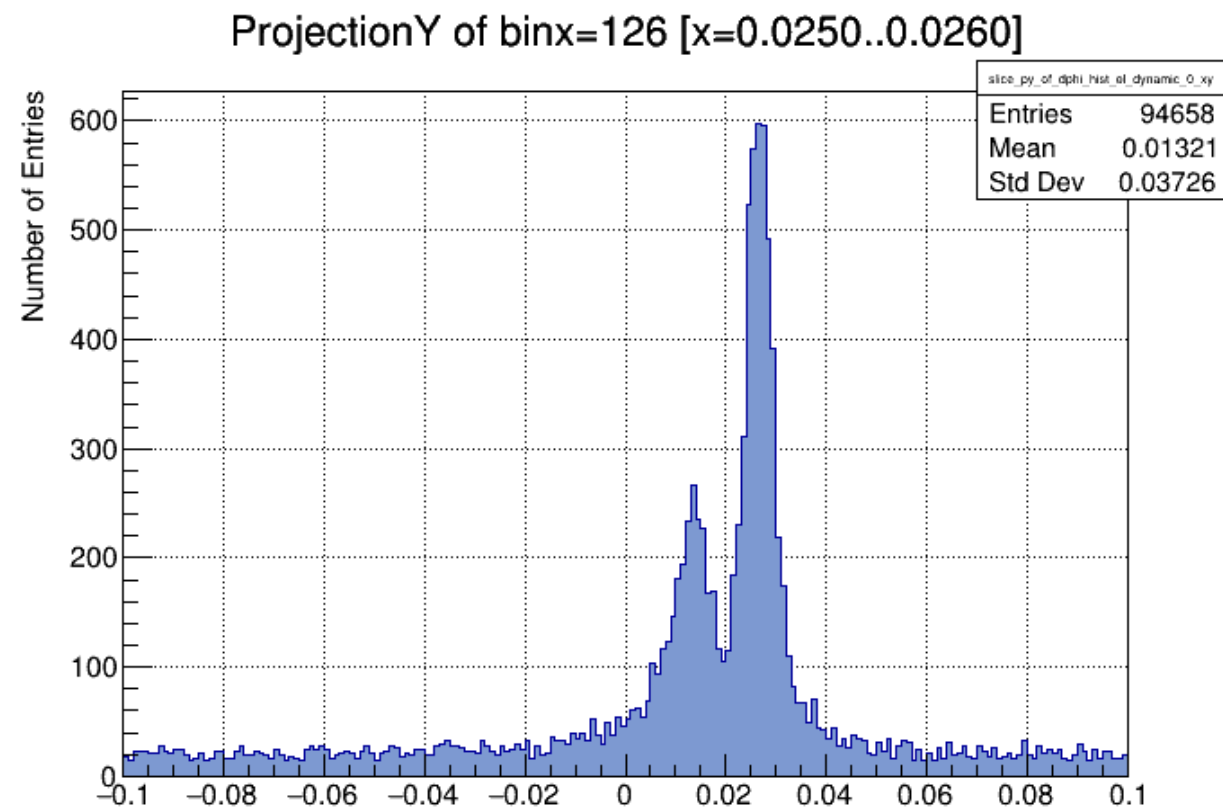
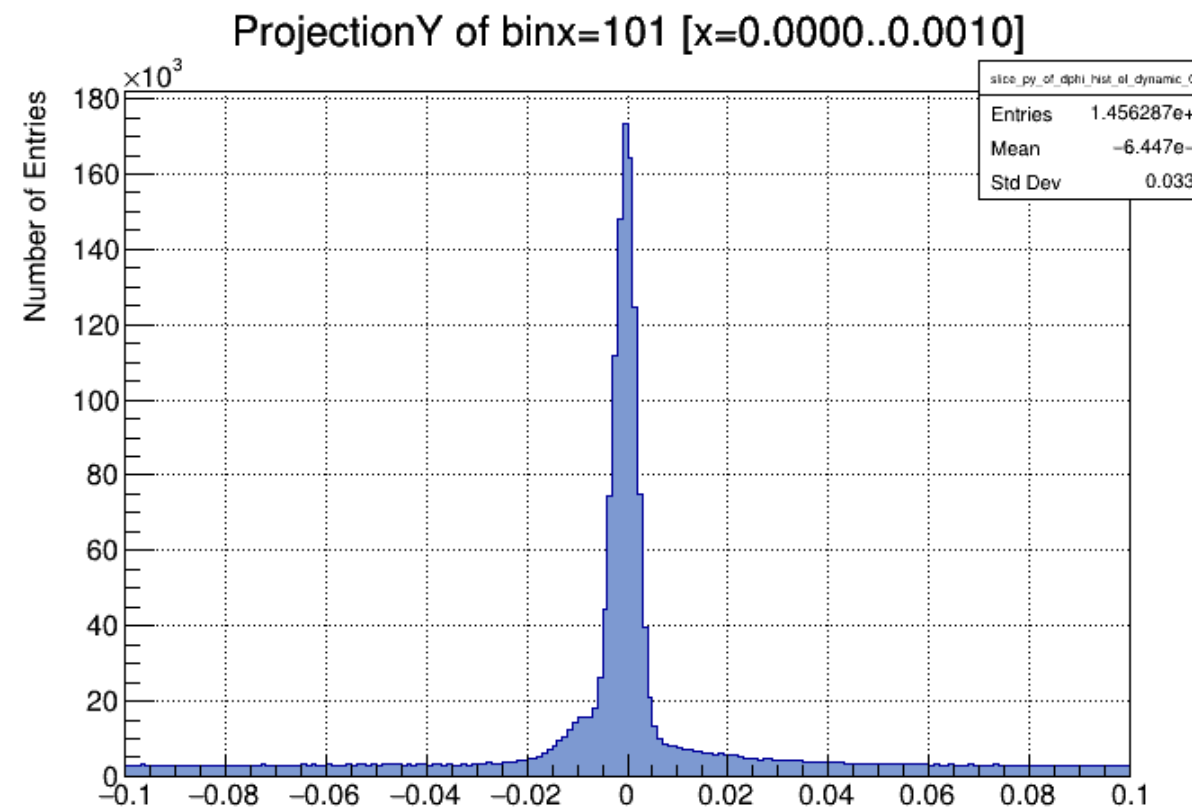


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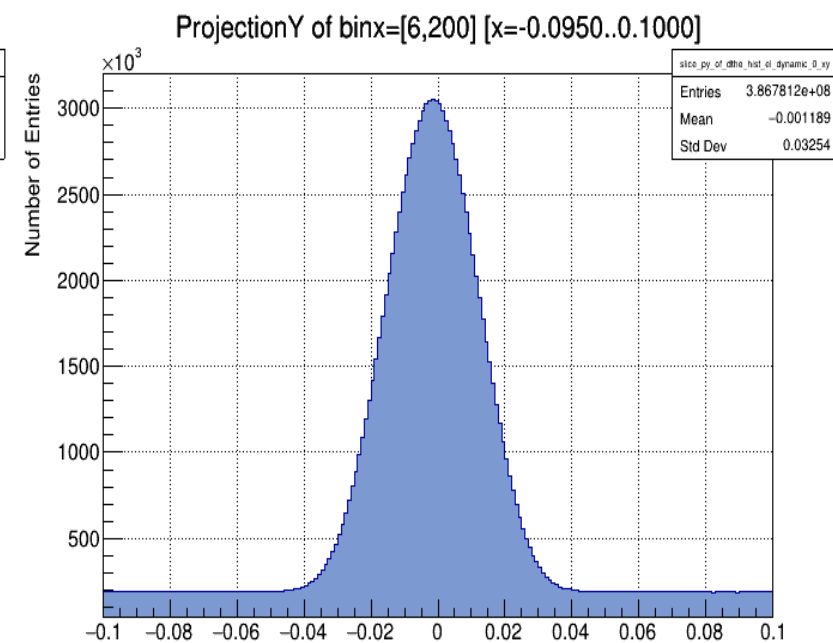
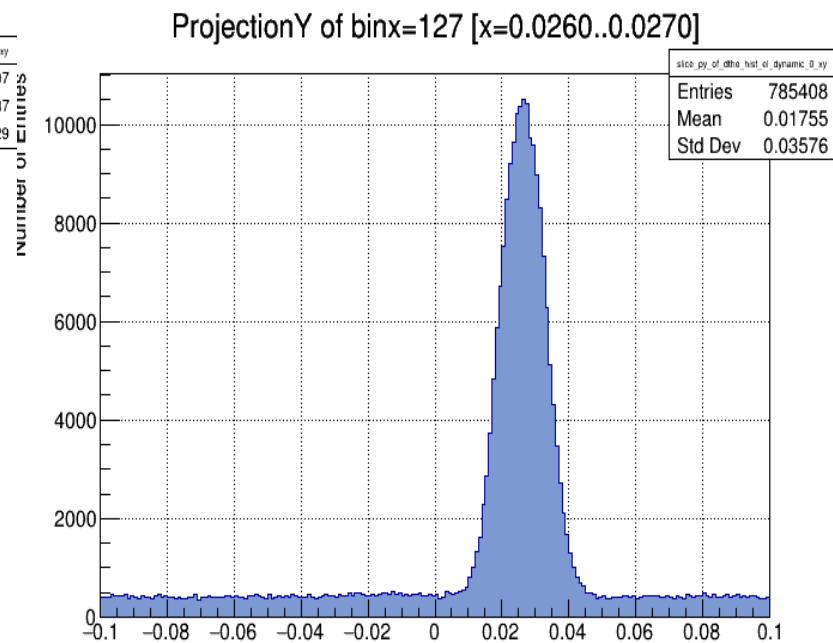
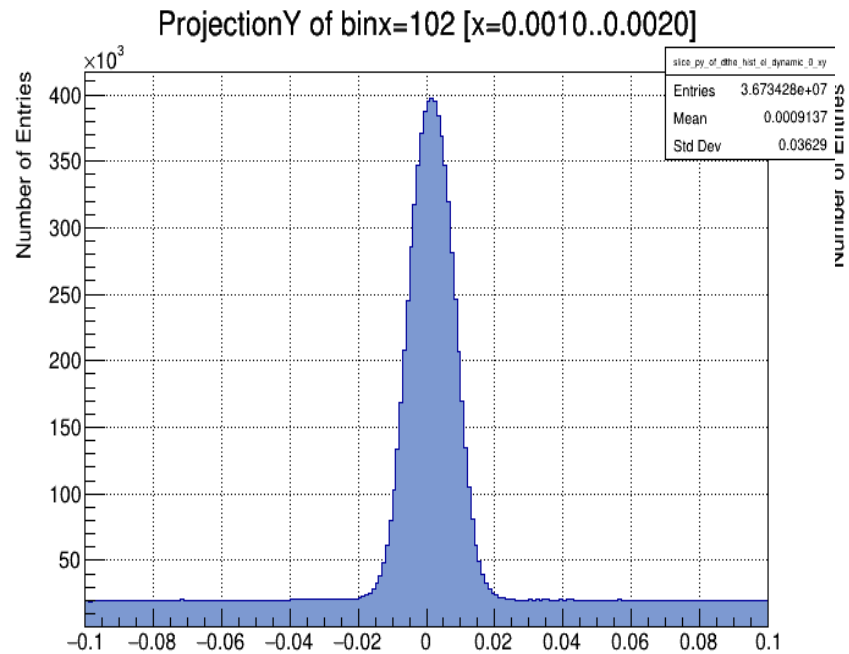




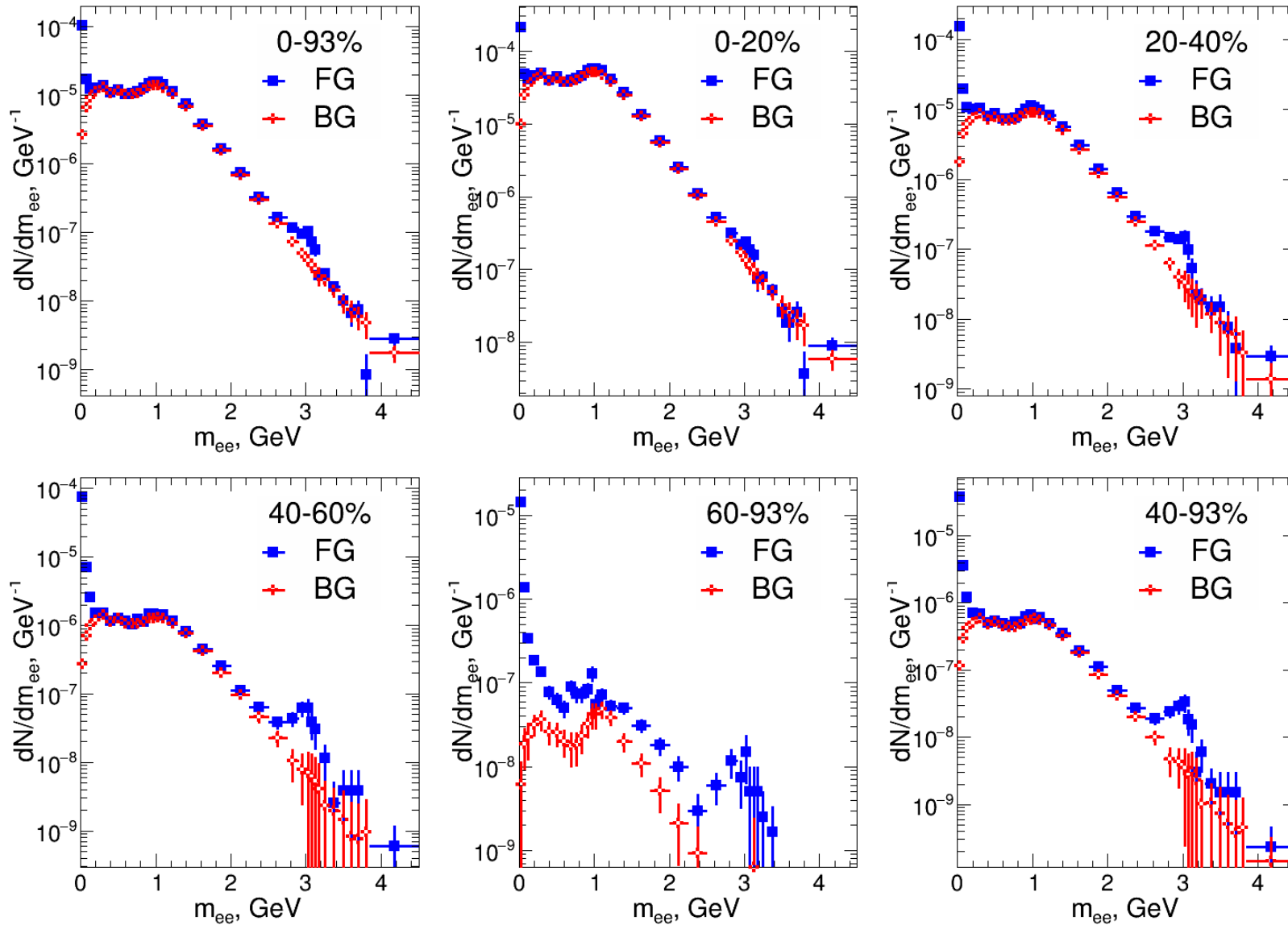
# My New Research



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**Thank you for your attention!**

**No Backup**