

PHENIX Data and Analysis Preservation Status and Plan

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for PHENIX Collaboration

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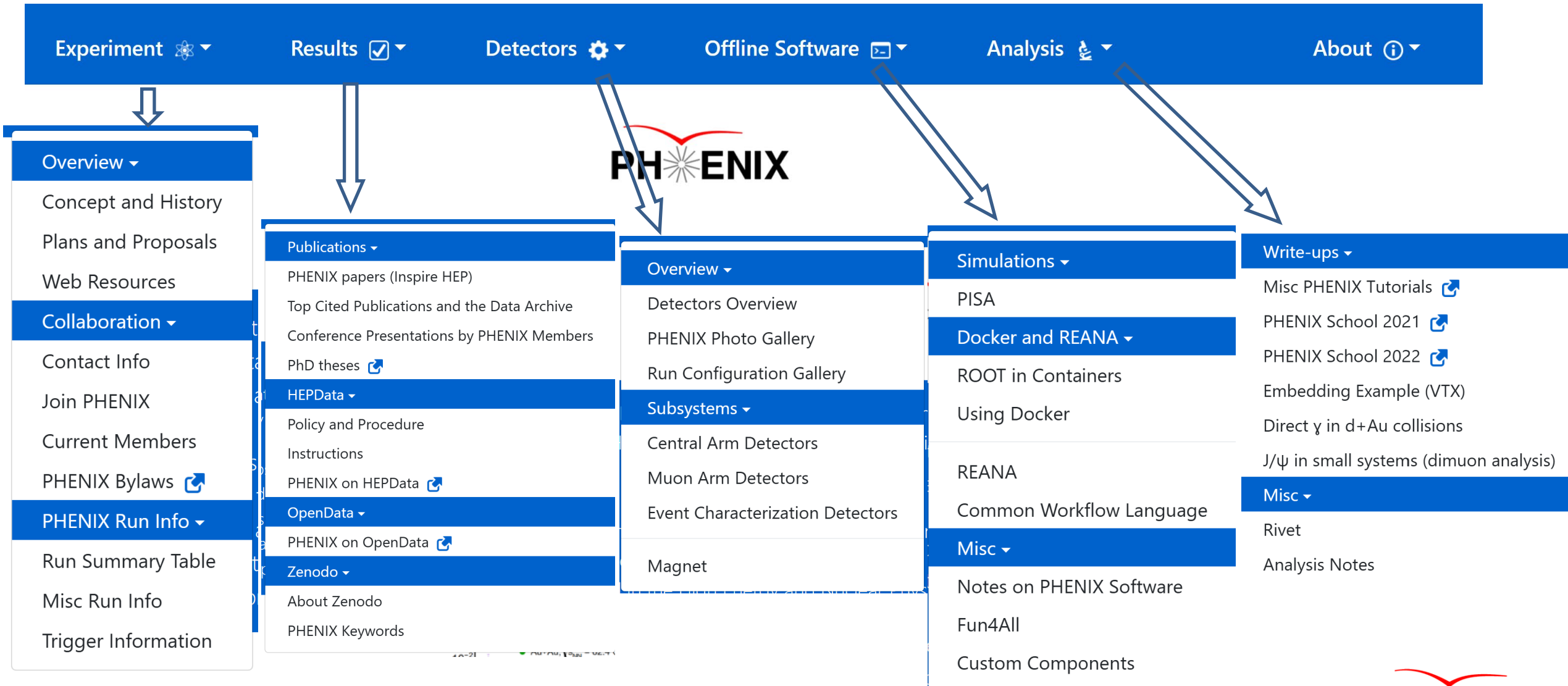
Question

- Question to PHENIX

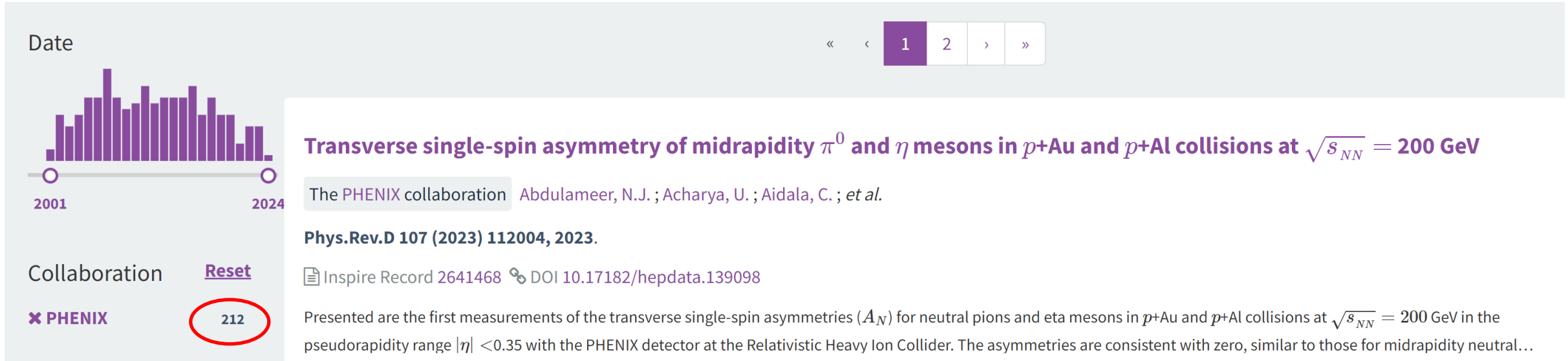
1. Please give us the summary of your data preservation plans.

- To answer this question, I briefly summarize
 - the current status of PHENIX data/analysis preservation
 - lessons learned
 - Our future plan

PHENIX web page as analysis portal



PHENIX published data in HEPData: Complete

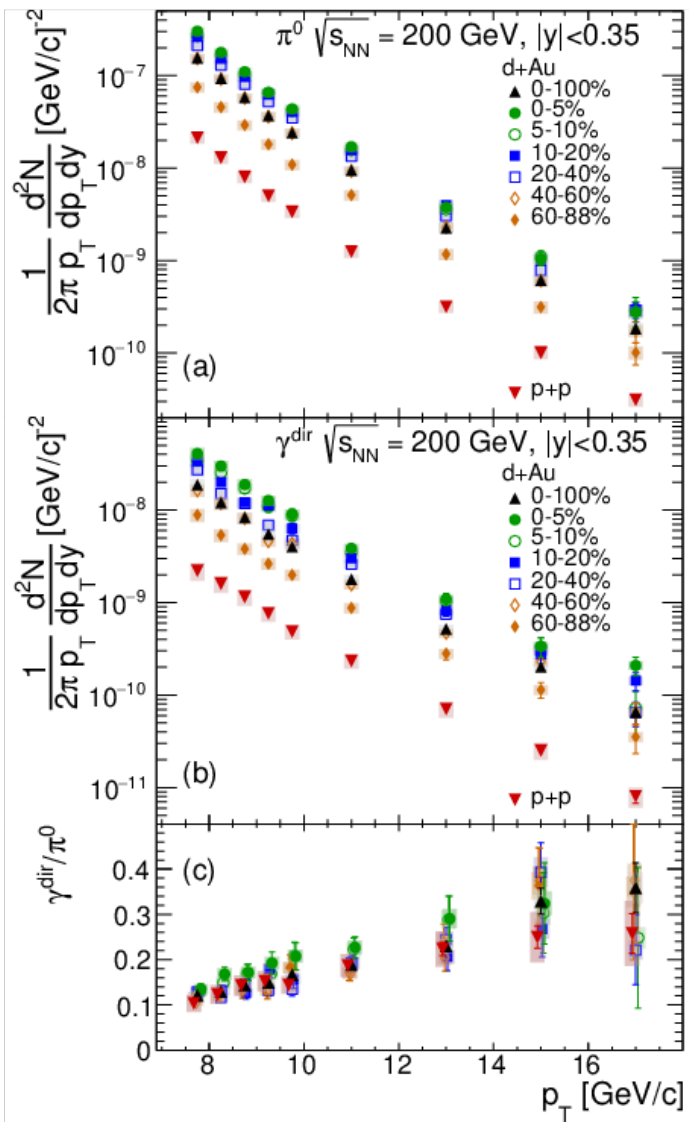


- Christine Natrass and her undergrad students of U.Tennessee, Knoxville worked to publish the data of phenix papers in HEPData
- This project is completed. 212 out of 222 PHENIX papers are in HEPData as of June 1st, 2024. (The number increased to 213 now)

REANA: d+Au analysis

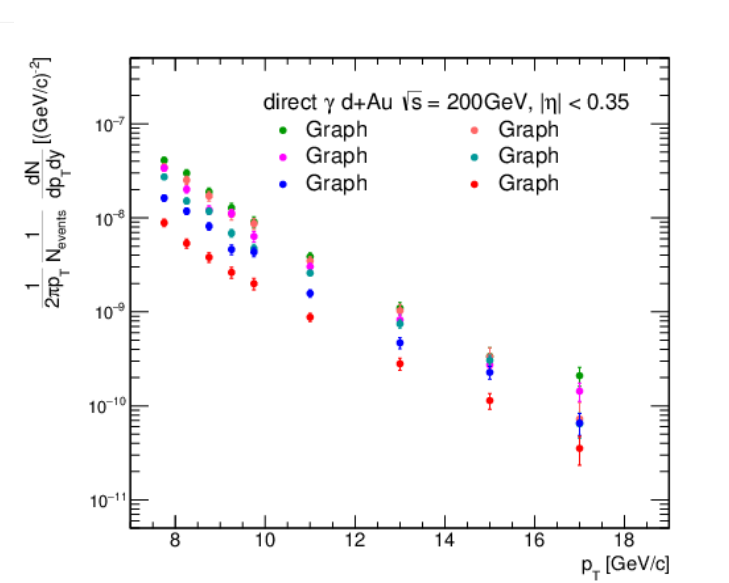
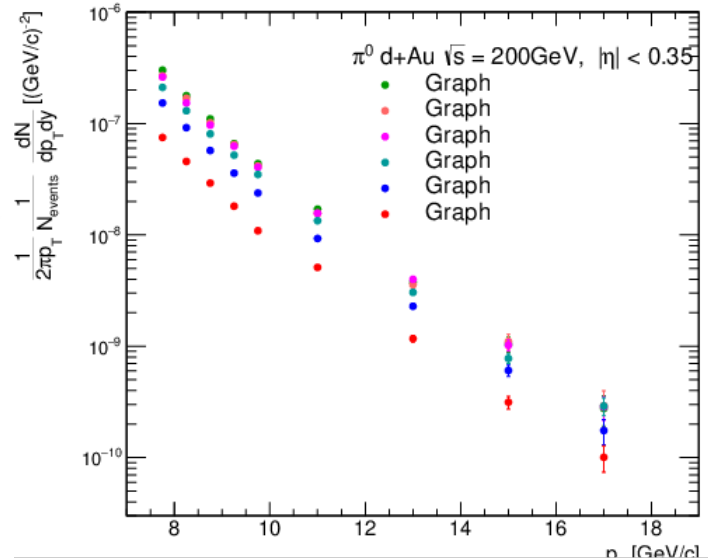
Published π^0 and γ spectra

Same spectra from REANA / Docker



π^0

γ



- REANA is a framework of analysis preservation
 - Analysis environment (libraries, etc) are in container (Docker)
 - Workflow in YAML
- We started implementing full analysis chain of one of key analyses in REANA @ BNL in 2022
 - d+Au π^0 and direct photon
 - Implementation of data/analysis part and simulation part are now completed

Lessons learned

- Implementing **high level analysis** of the d+Au direct photon and π^0 in REANA took about 6 months
 - needs heavy involvement from the actual analyzer
 - needs about 1 FTE on the BNL side
- Current d+Au implementation is just to reproduce the published results. Ideally, we want to preserve analysis such that the data can be re-analyzed in different ways. This requires further effort
- DAP effort needs both of support of computing experts and physics analyzer
- Preserving the knowledge to analyze the PHENIX data is essential to extract physics
- Documentation is the key for Analysis Preservation

Future Plan

- Continue the DAP effort in past several years
 - Develop PHENIX website as analysis portal
 - Put documents in CERN Zenodo digital repository
 - Upload published data in HEPData
- Move all analysis based on library in container
 - This is needed due to discontinue of SL7 in SDCC
- Implement more key analyses in REANA at the same level of the d+Au direct photon/pi0 analysis
 - J/ψ in dimuon arms (starting)
 - Di-electron and direct photons with conversion
 - Heavy Flavor in central arms/VTX
- Needs support to carry out these plan
 - Need to setup CVS server as /afs is to be discontinued
 - Support for REANA and supporting personell
 - Priority condor slots for PHENIX to smoothly run “analysis Taxi”

DAP effort should be a RHIC-wide effort that all three experiments should participate. PHENIX is willing to participate in the RHIC-wide DAP effort to share our experience