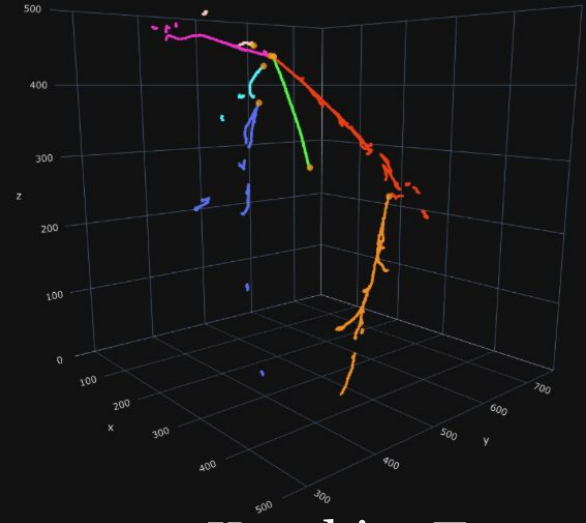
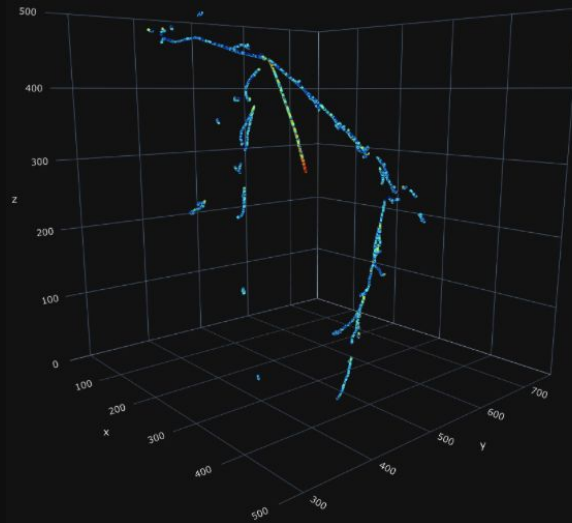


# NPML Closing ... and future ...



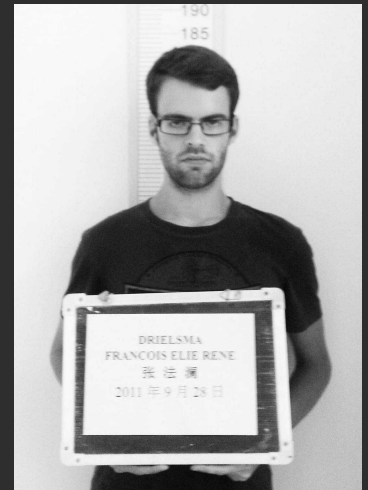
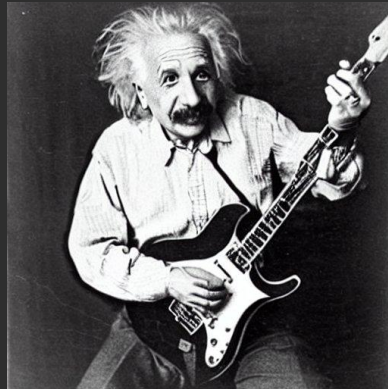
Kazuhiro Terao  
SLAC National Accelerator Laboratory  
Aug. 24th 2023 @ Tufts



“New directions in science are launched by new **tools** much more often than by new concepts.”

Freeman Dyson (1923-2020)

*Truly exciting time to see all these applications at this NPML!*



# NPML 2024

Planning a Neutrino 2024 satellite workshop in Europe!  
Stay tuned! (Help us Saul & Leigh!)

**We will send you a survey about NPML ...**

- Was this useful/interesting?
- How can we make this better?

***New!***

## **NPML Data Challenge**

Organized public data and research challenge!  
Dedicated session in NPML2024 (contact Kazu)

# Thanks to IAIFI for sponsoring!

IAIFI - NSF research institute to advance our knowledge in AI and fundamental physics (MIT/Harvard/Northeastern/Tufts)

- Research at the intersection of AI and physics
- Training/Education (e.g. summer school)
- Hosting workshop
- Fellowship program





Differentiable and Probabilistic  
Programming for Fundamental  
Physics

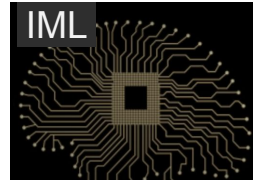
COFI Advanced Instrumentation and  
Analysis Techniques Winter/Summer  
School 2023

Machine Learning and the Physical Sciences



Bayesian Deep Learning

IML

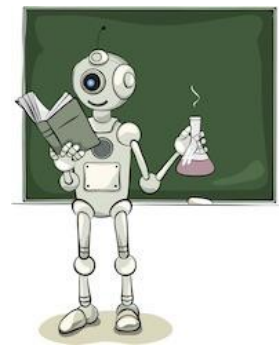
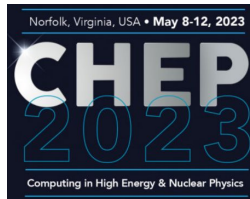


**CODAS-HEP**

Computational and Data Science for High Energy Physics

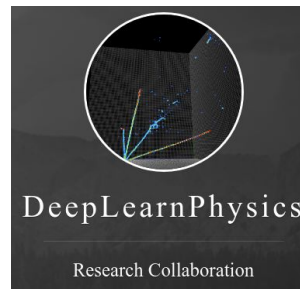
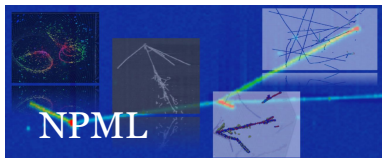


The NSF Institute for  
Artificial Intelligence and  
Fundamental Interactions



WatChMaL

DIDACTS



DeepLearnPhysics

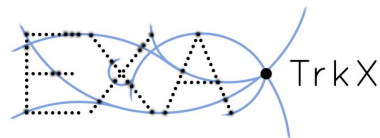
Research Collaboration

SONIC



Connecting  
The Dots 2023

8<sup>th</sup> International CTD Workshop  
Université Paul Sabatier, Toulouse, France  
10-13 October 2023



# How NPML started

Sharing the advancements in the field and networking across groups

... it was informally proposed and initiated by me in 2020, joined by colleagues to organize [the first workshop](#) ...

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## Next steps?

Great we see the interest in NPML and organized workshops so far.

What's beyond “inviting people to give talks every year” ?

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## My goal

Build AI/ML research community hub for neutrino physics research  
Accelerate/Scale current research projects, catalyze new research ideas



## **Challenges:** how can we accelerate AI/ML in neutrino?

- Gap between “school/workshop” and “developing AI/ML applications”
- Lack of tracking of knowledge/expertise, lack of the knowledge base
- Lack of cross-experiment/project networking to quickly build ideas

## **Community Development**

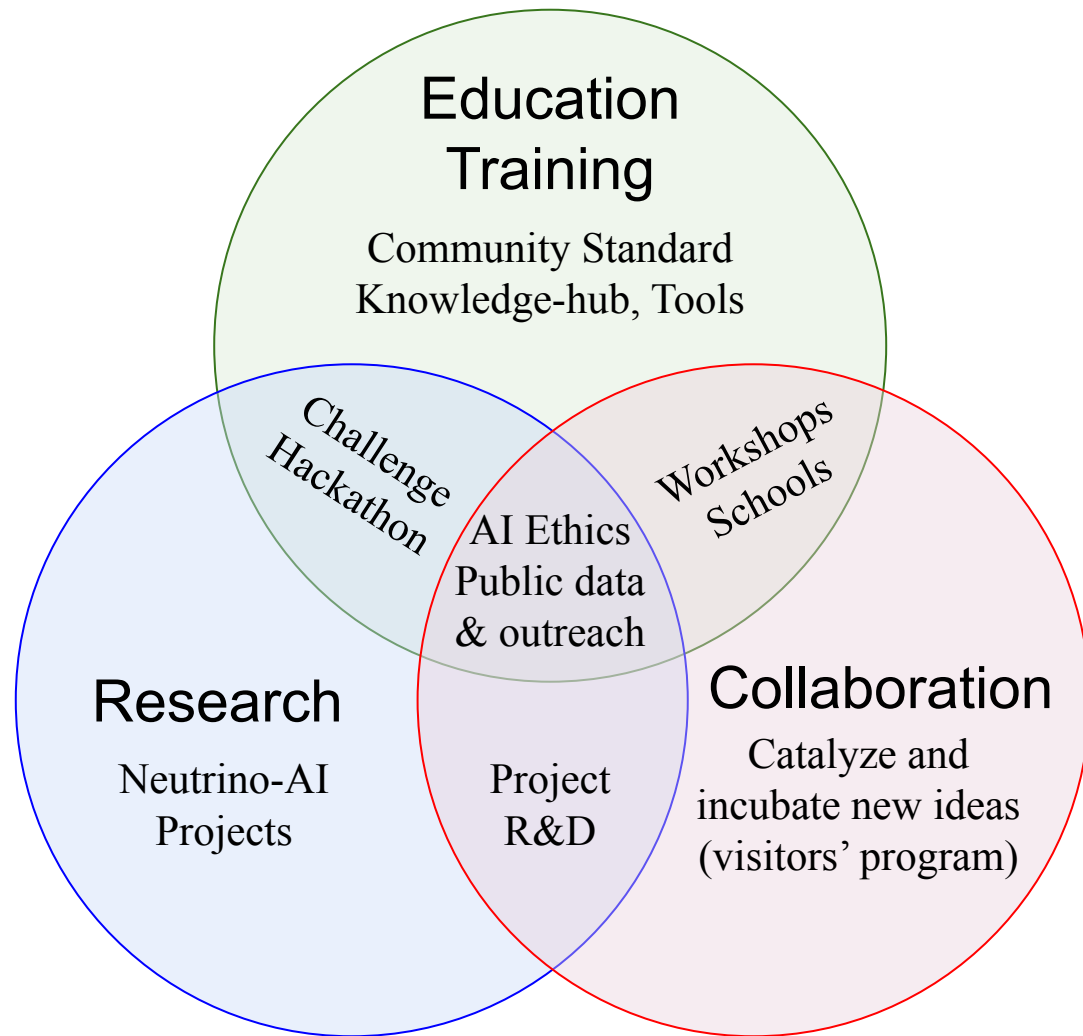
- Build knowledge/tool-base to share with the community
- Support initiatives: review and incubate new research ideas
- Community-wide AI/ML development

# Proposing a Research Hub/Center

- Objectives
  - **Pipeline & Infrastructure** to build and improve community standards
  - **Collaboration** to catalyze and incubate new AI/ML research ideas
  - **R&D** for impactful AI-for-physics for neutrino research community
  - **Public data** + **AI Ethics** hub in neutrino physics community

... including \$\$ support for NPML

[An example role model: LPC](#)



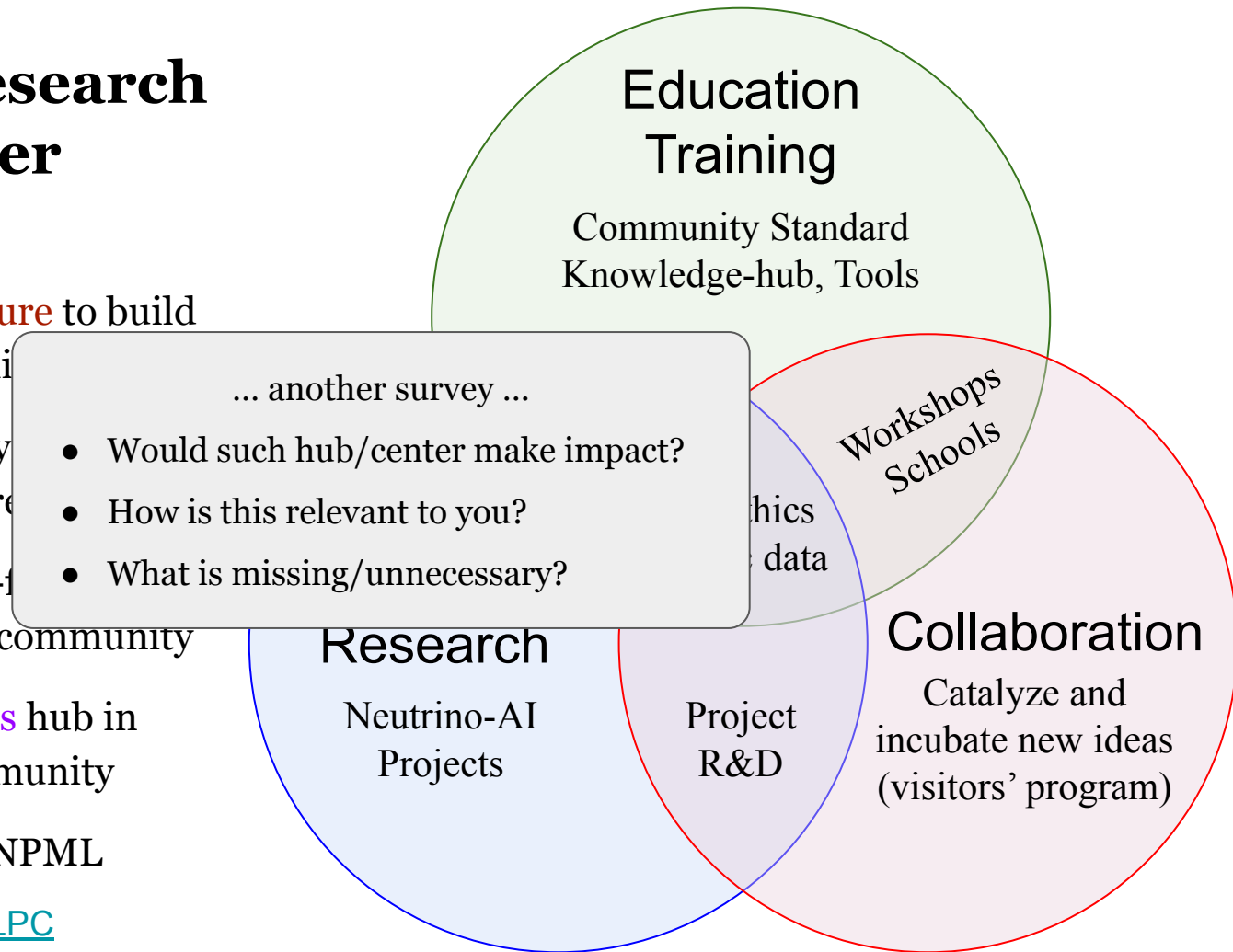
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# Another thing to centralize: Job Advertisements!

We will host a collection of job ads for young researchers in the  
AI/ML + neutrino community.

Please send your job (1 slide) ads to Kazu

# Work at LLNL on nEXO!

Postdoc opening for start in Fall 23 - Summer 24  
(but reach out anyway if interested in other timelines)

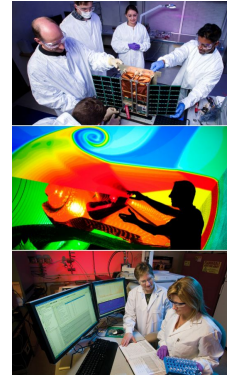
ML topics: denoising, inference, invertible  
simulations

SF Bay Area, California  
(but the less expensive part)

High rate (~50%) of conversion to permanent staff

25% time reserved for career development

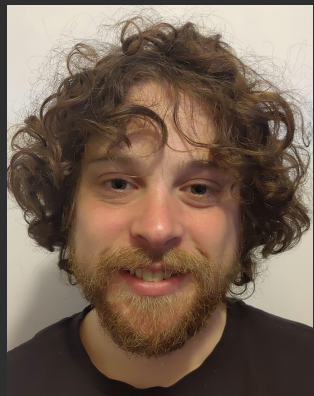
Write to: [brodsky3@llnl.gov](mailto:brodsky3@llnl.gov)



glasdoor  
BEST PLACES  
TO WORK  
2022



# Finally (but not the least): thanks to the organizers!



Nick Prouse  
Imperial



Taritree Wongjirad  
Tufts



Aobo Li  
UC San Diego



Francois Drielsma  
SLAC

- Absent this time:
- Corey Adams
  - Patrick de Perio
  - Marco del Tutto

## Thank you for joining :) See you next year!