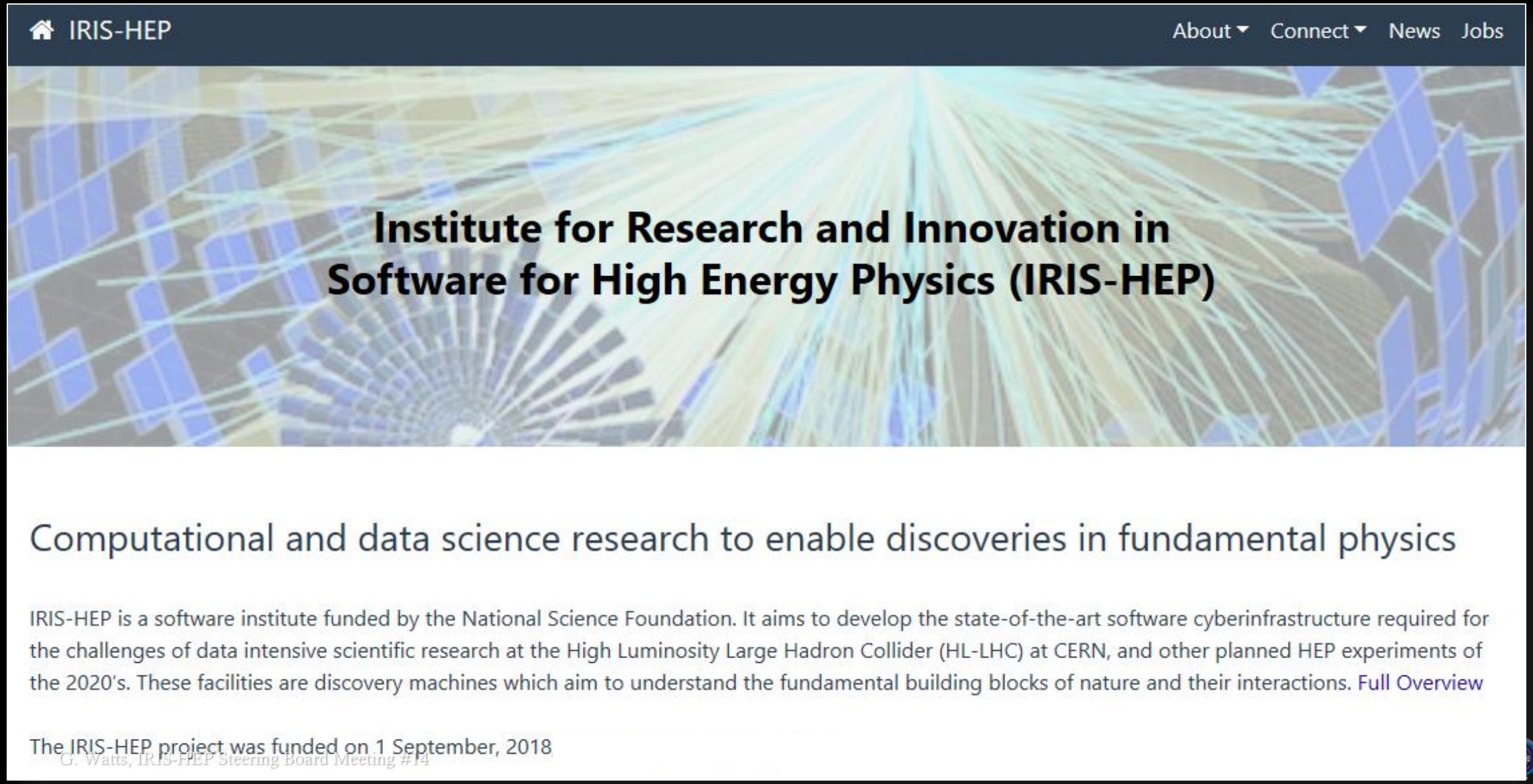
IRIS-HEP
About
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Institute for Research and Innovation in Software for High Energy Physics (IRIS-HEP)
Computational and data science research to enable discoveries in fundamental physics
IRIS-HEP is a software institute funded by the National Science Foundation. It aims to develop the state-of-the-art software cyberinfrastructure required for the challenges of data intensive scientific research at the High Luminosity Large Hadron Collider (HL-LHC) at CERN, and other planned HEP experiments of the 2020's. These facilities are discovery machines which aim to understand the fundamental building blocks of nature and their interactions. Full Overview
The IRIS-HEP project was funded on 1 September, 2018

Institute for Research & Innovation
in Software for High Energy Physics

IRIS-HEP Steering Board Meeting #14

G. Watts

For the IRIS-HEP Executive Board

2022-02-14

"The IRIS-HEP Steering Board represents the Institute's stakeholders to provide, to the Executive Board, the stakeholder's input on the priorities, execution, and strategy of the Institute."

Thank You

Danilo Piparo (CERN)
CMS

Oliver Gutsche (FNAL)
US CMS Ops Program

Paolo Calafiura (LBNL)
US ATLAS Ops Program

Patrick Koppenburg (NIKHEF)
LHCb

Simone Campana (CERN)
WLCG

Graeme Stewart (CERN)
HSF

Alessandro Di Girolamo (CERN)
ATLAS

Ken Herner (FNAL)
The OSG Council

Welcome

steering-board@iris-hep.org

(you)

exec-board@iris-hep.org

(us)

Next Meeting Dates
(proposed)

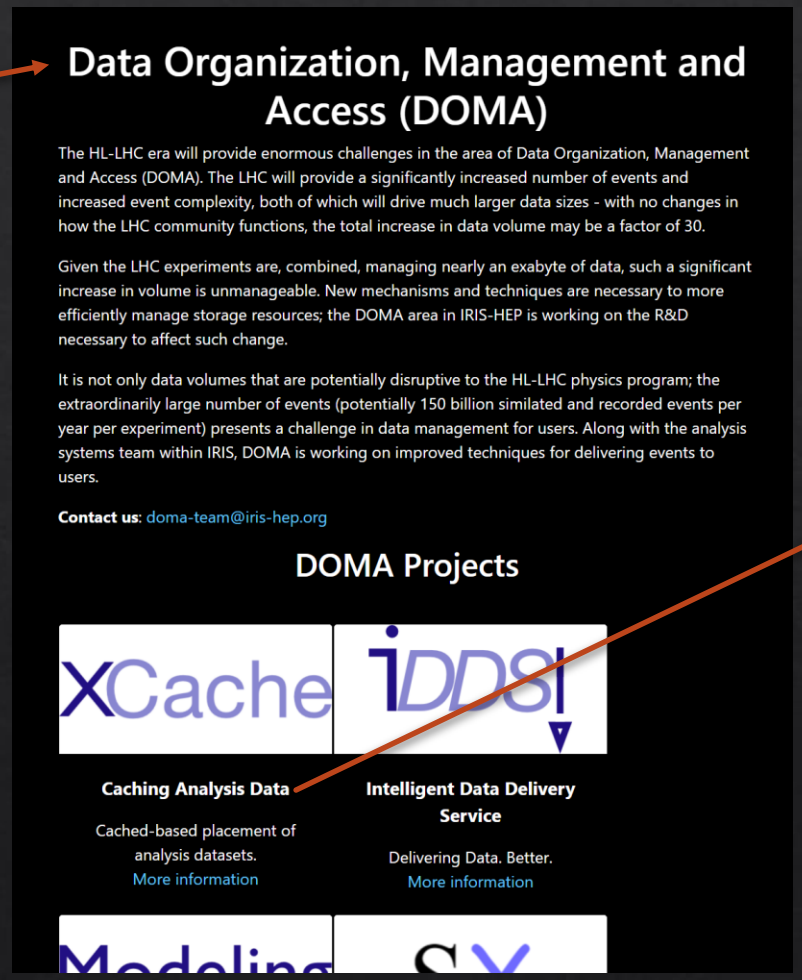
Sept 13, 2022 (CERN VM WS Conflict)
Dec 13, 2022
February 14, 2023

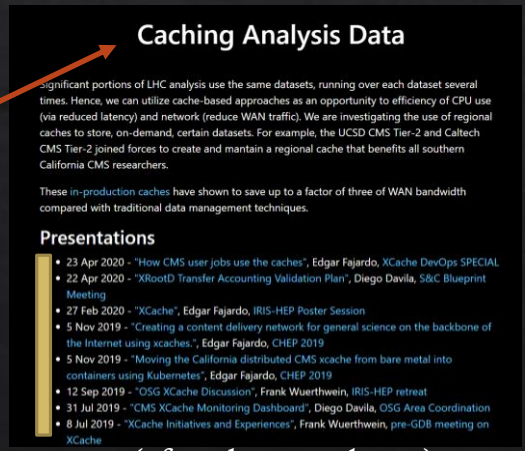
Today

Feedback from the experiments

Please use the google doc circulated in the email to add comments or make any notes you want us to track!

Project Information





Per-project information is available on all IRIS-HEP projects.

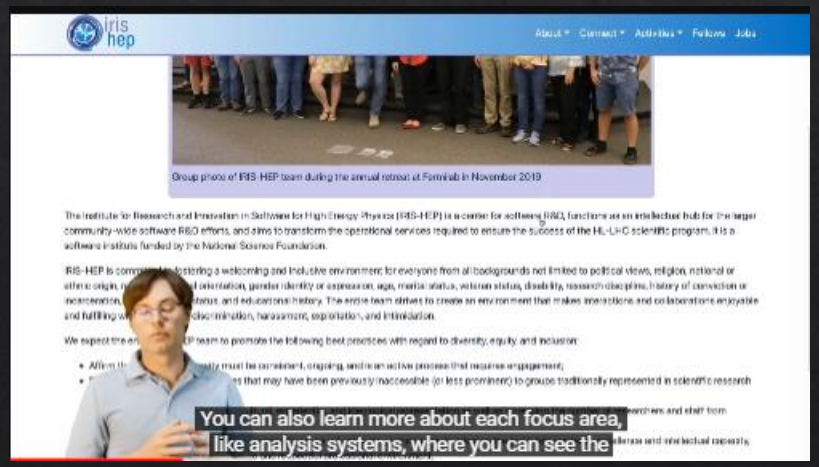
(often, but not always)

https://indico.cern.ch/event/1114340/

NSF Review

One Day of Presentations

- Series of YouTube videos by students, postdocs, etc.
- One presentation for each of the 9 programmatic questions, virtual



NSF 42-Month Review of IRIS-HEP

16–17 May 2022
US/Eastern timezone

Timetable

Review Preparatory Presentations & Videos

Supplementary Student/Postdoc 5 minute talks

Quick links

- IRIS-HEP website
- Glossary (Please feel free to suggest additions)
- Community White Paper [Dec 2017, journal publication 2019]
- S2I2-HEP Strategic Plan [Dec 2017]
- IRIS-HEP Execution Phase Project Execution Plan (Version 2.1) [Sep 2020]
- IRIS-HEP Budget Overview
- Milestones, Deliverables
- Metrics
- Risk Registry

NSF Review

Recommendations
- 15 total
- Many used the phrase "encourage IRIS-HEP to continue…"

Theme: Connecting our work to the Science it Enables
- How does each project contribute to the science?
- How has community input affected science capabilities?
- Update web pages to add this meta data to each project

Theme: Sustainability & Roadmap
- What does the last 1.5 years of IRIS-HEP look like?
- What does the Software Roadmap to HL-LHC look like?
- How do the two play into each other?
- Links to theory community
- "Gap Analysis" for HL-LHC software ecosystem
- We know a lot about HL-LHC now
  - Input from experiments & US Operations Programs
  - Snowmass Whitepapers
  - Grand Challenges
- And we can collect quite a bit (in next ~1.5 years)
  - Internal Retreats (can we have one in person?)
  - CUA US S&C Meeting
  - Steering Board

NSF Review

Theme: Collaboration

- HSF engagement
- Engagement with the LHC experiments
- Engagement with other experiments and software projects where it makes sense
- How has community input affected science capabilities?
- Update web pages to add this meta data to each project
- Improve Software Citation

Theme: Sustainability

- Plan beyond the end of the IRIS-HEP project
- How will specific projects live beyond IRIS-HEP?

Next Steps

- Writing up response to the questions
- Starting the Year 5 Planning Process

Year 5 Planning Process

Due to the review, we are starting the Y5 Planning Process Late

- Focus Area Chats
  - Collate review responses
  - Plans for last year
- Chats with the PI's
  - Understanding how each PI's team fits into the plan
- EB meeting(s) to discuss plan
- Collect draft budget proposals for Y5

This will be a busy summer

Recent Highlights

- mkFit's validation by CMS now complete.
  - It is the default tracking software package for Run 3!
- SkyHook was released as part of Apache Arrow 7.0.0
- HTTP-TPC transition for the WLCG is now complete
  - almost 90% (by volume) of transfers use the new protocol

https://indico.cern.ch/e/aew2

Analysis Ecosystem Workshop

May 23-25, IJCLab, Paris
Hybrid

Topics for the workshop will include, amongst others:

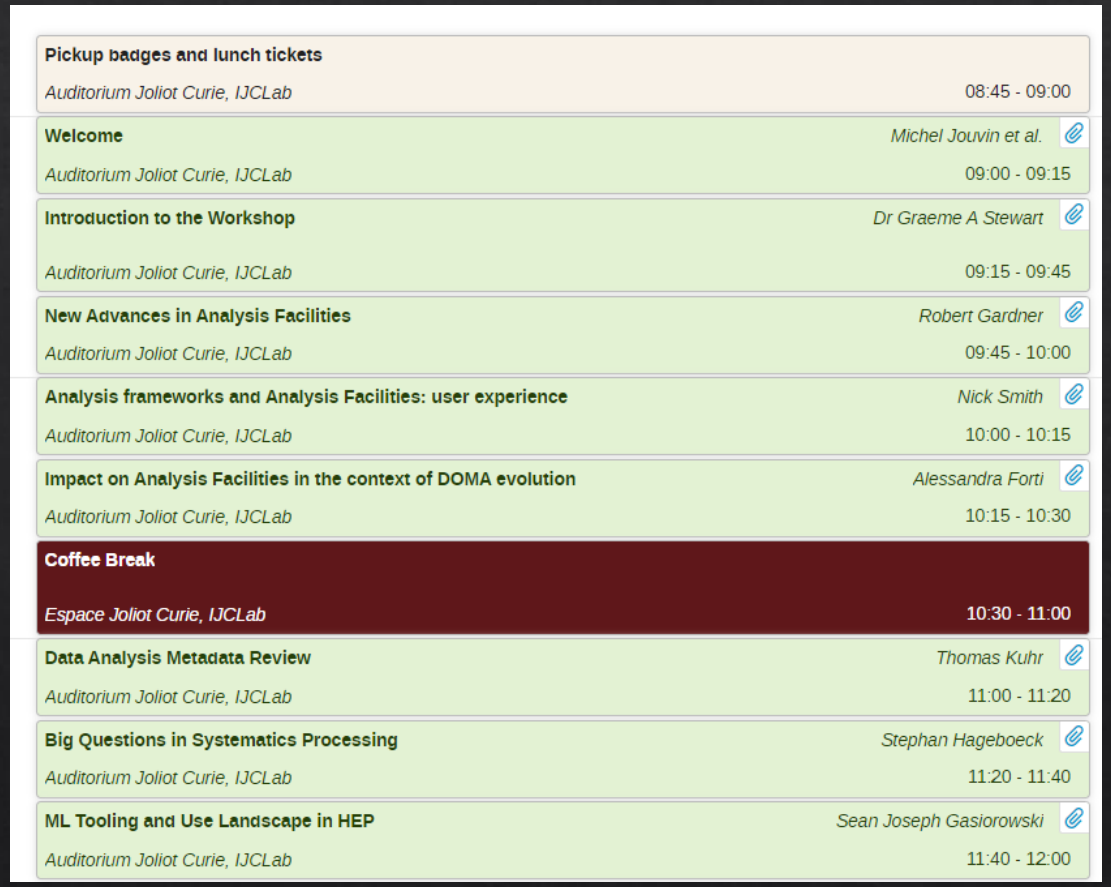
- Analysis Facilities
- ML tools and differentiable computing workflows
- "Real-time" trigger-level analysis
- Analysis User Experience and Declarative Languages
- Analysis on reduced formats or specialist inputs
- Bookkeeping and systematics handling

As a workshop, there will be limited presentations, lots of time for discussion and a written outcome that summarises the workshop's conclusions and points the way forward.

Analysis Ecosystem Workshop

Over 70 people attended in person
- Smaller number by Zoom (we had issues at the start)

Topics
- Metadata & Systematics
- Analysis Facilities
- ML and Autodiff Workflows
- Reduced Formats (nanoAOD, PHYSLITE)
- UX and Declarative Languages
- Realtime Trigger Analysis



Pickup badges and lunch tickets		
Auditorium Joliot Curie, IJCLab		08:45 - 09:00
Welcome	*Michel Jouvin et al.*	
Auditorium Joliot Curie, IJCLab		09:00 - 09:15
Introduction to the Workshop	*Dr Graeme A Stewart*	
Auditorium Joliot Curie, IJCLab		09:15 - 09:45
New Advances in Analysis Facilities	*Robert Gardner*	
Auditorium Joliot Curie, IJCLab		09:45 - 10:00
Analysis frameworks and Analysis Facilities: user experience	*Nick Smith*	
Auditorium Joliot Curie, IJCLab		10:00 - 10:15
Impact on Analysis Facilities in the context of DOMA evolution	*Alessandra Forti*	
Auditorium Joliot Curie, IJCLab		10:15 - 10:30
Coffee Break		
Espace Joliot Curie, IJCLab		10:30 - 11:00
Data Analysis Metadata Review	*Thomas Kuhr*	
Auditorium Joliot Curie, IJCLab		11:00 - 11:20
Big Questions in Systematics Processing	*Stephan Hageboeck*	
Auditorium Joliot Curie, IJCLab		11:20 - 11:40
ML Tooling and Use Landscape in HEP	*Sean Joseph Gasiorowski*	
Auditorium Joliot Curie, IJCLab		11:40 - 12:00

Report/whitepaper is now being written up

Other Recent Meetings & Workshops

June, 2022

- 3 Jun - 3 Jun, 2022 - Mini-workshop on Graph Neural Networks for Tracking (*Princeton University*)

May, 2022

- 31 May - 2 Jun, 2022 - Connecting the Dots 2022 (*Princeton University*)
- 23 May - 25 May, 2022 - Analysis Ecosystems Workshop II (*IJCLab, Orsay, Paris*)

April, 2022

- 25 Apr - 26 Apr, 2022 - IRIS-HEP AGC Tools 2022 Workshop (*Virtual*)
- 21 Apr - 22 Apr, 2022 - Matplotlib Training (Virtual) (*Virtual*)

March, 2022

- 28 Mar - 30 Mar, 2022 - Software Carpentry (Virtual) (*Virtual*)
- 25 Mar - 25 Mar, 2022 - Analysis Facilities Forum Kickoff (*Virtual*)
- 5 Mar - 5 Mar, 2022 - Data Analysis for Lab Research (*Virtual*)

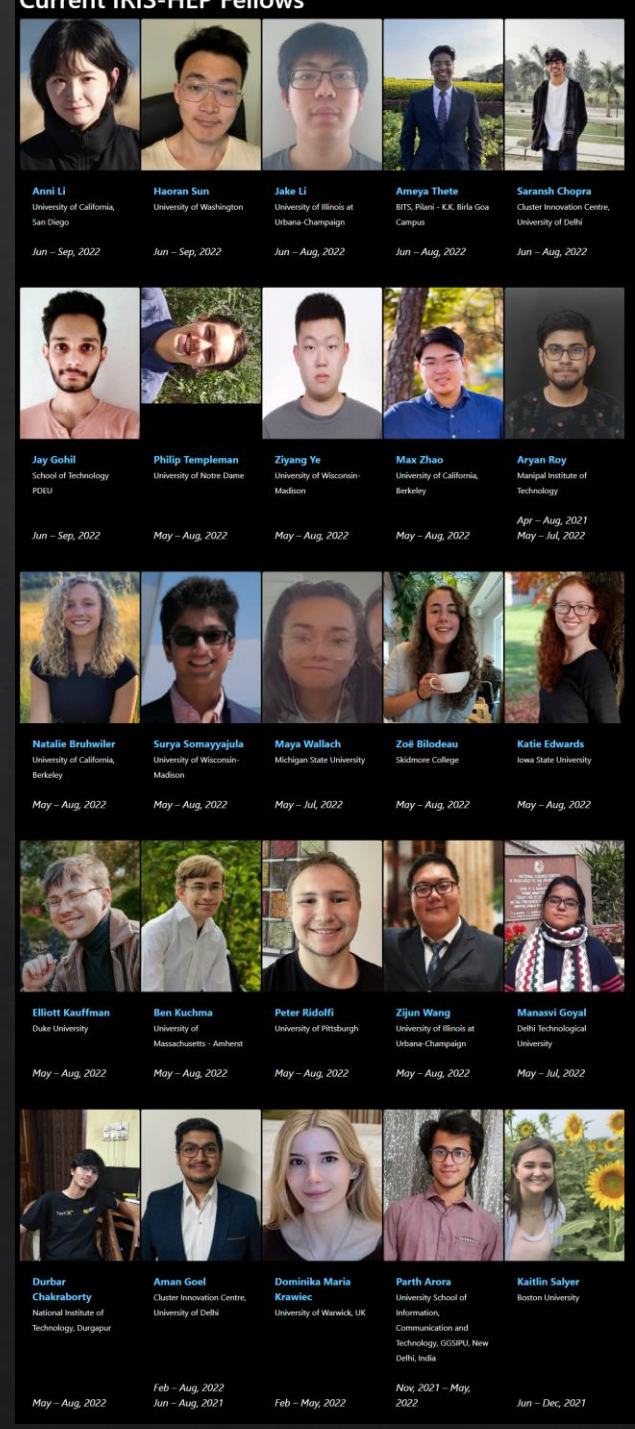
Find all meetings here

Fellows

New crop of undergraduate IRIS-HEP Fellows!

- Thanks for all the help in recruitment!
- Cross all focus areas of IRIS-HEP!
- Innovative Algorithms
  - PV finder in CMS/ATLAS
  - GNN in DUNE, ML for event-timing in DUNE
  - Generation using GNN, tracking using GNN
  - Muon Collider tracking & electron reco
  - Dead Sensor detection
  - 3D Reco of Atom Cloud for MAGIS-100
- DOMA
  - Network metrics in data federation caches
  - Dask and XROOTD integration

- Analysis Systems
  - Uproot acceleration, awkward & vector acceleration
  - Boost-Histogram improvements
  - Cling (C++) packaging
  - FAIR
  - Metrics for AF's
  - miniAOD transformer for SX, Jupyter plugin for SX
  - pyhf and CMS combine
  - Analysis workflow MINERvA



Questions & Comments?