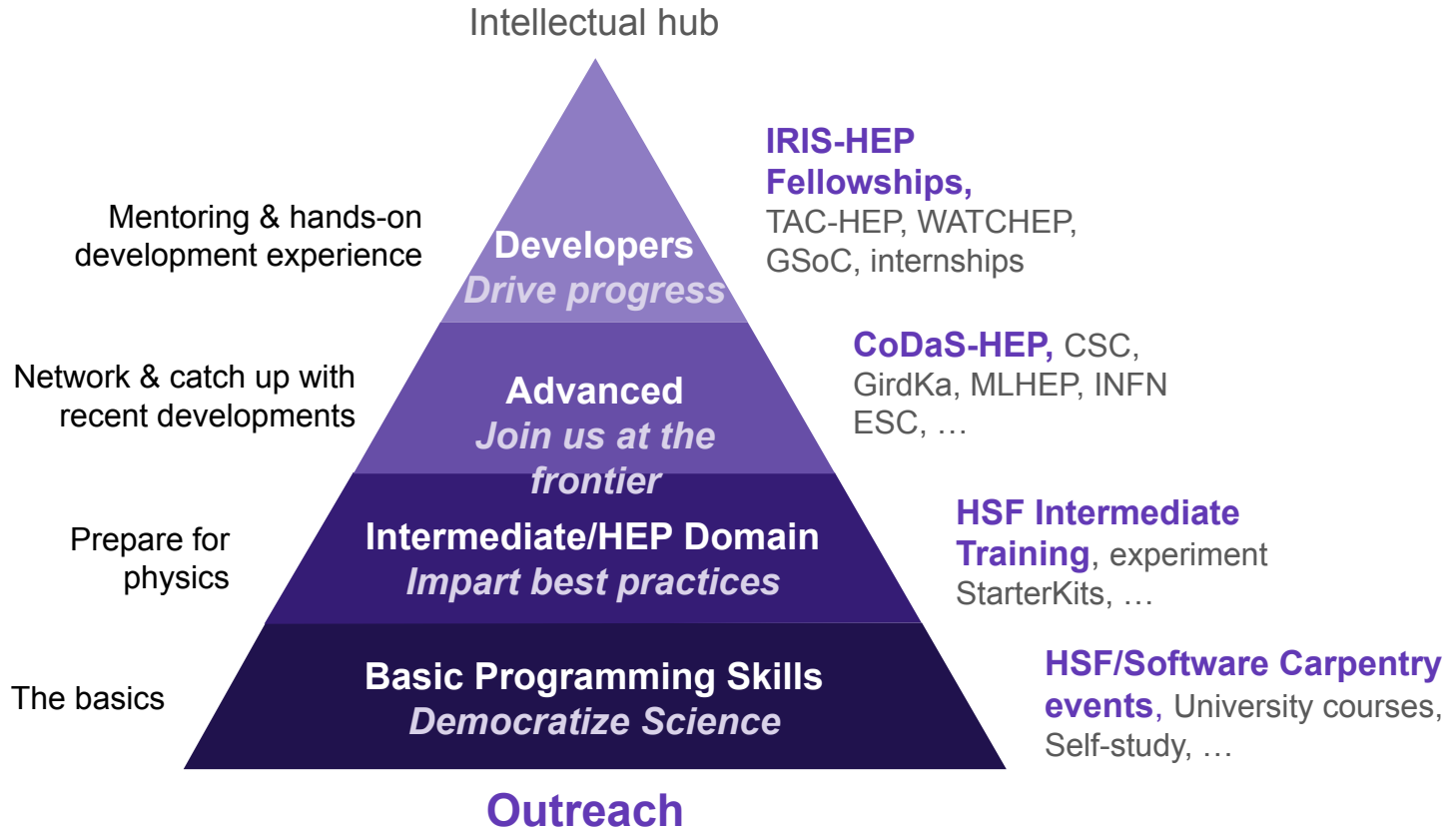

Training, Education and Outreach

Sudhir Malik, Kilian Lieret for the IRIS-HEP Training Group

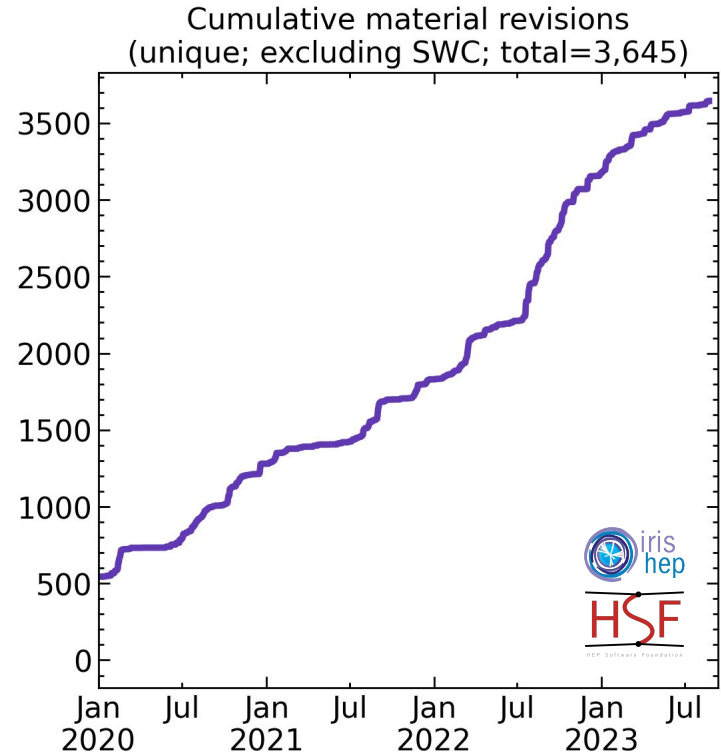
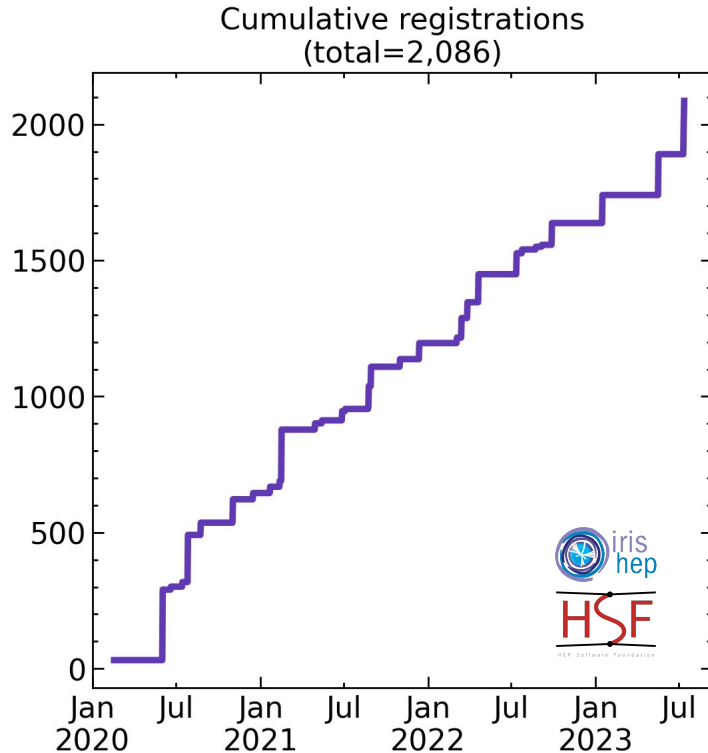


Software Training

Supporting **the full journey**

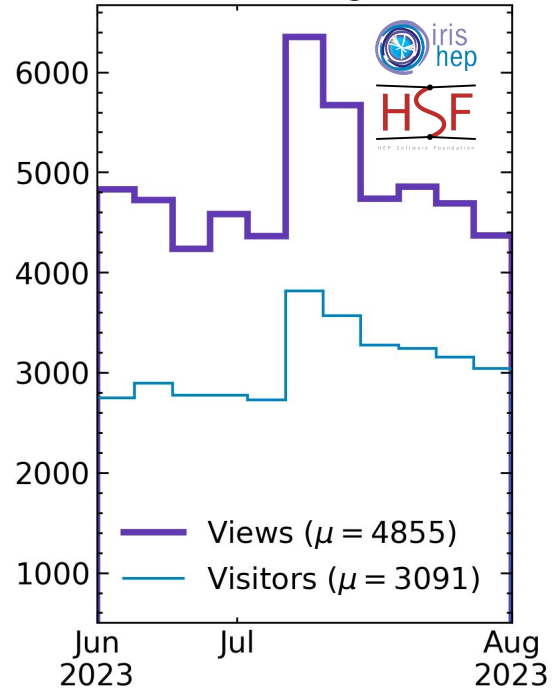


Training **statistics** (jointly with HSF)



Training **statistics** (jointly with HSF)

Weekly visitors and views (subset of training websites)



New: Web analysis with plausible on most of our own training websites

- **0(5000) page views / week (!)**
- However not evenly spread between modules; probably lots of traffic from non-HEP people via Google
- **Training center hits 0(500) views / month**
- Training center needs to be prominently linked from more places!

Training center now lists **25 modules** of various authors → Join breakout session for further development

Mockup of next gen

Search:

Programming language

- Python 15
- C++ 2

The Training **Grand Challenge**

- Seed **topical WGs** for advanced material
- Rebuild **Training Center**
- New **liaisons** (HEP & beyond)

- **80%** of cross-experiment software topics for HEP Ph.D. students covered
- **50%** of HEP Ph.D. students received intermediate training

2018 - 2022



2023

2024 - 2025

2026 - 2027

2027 - 2028

Democratized science,
Scaled out basic/
intermediate training

- **Teach first new** intermediate- advanced training modules

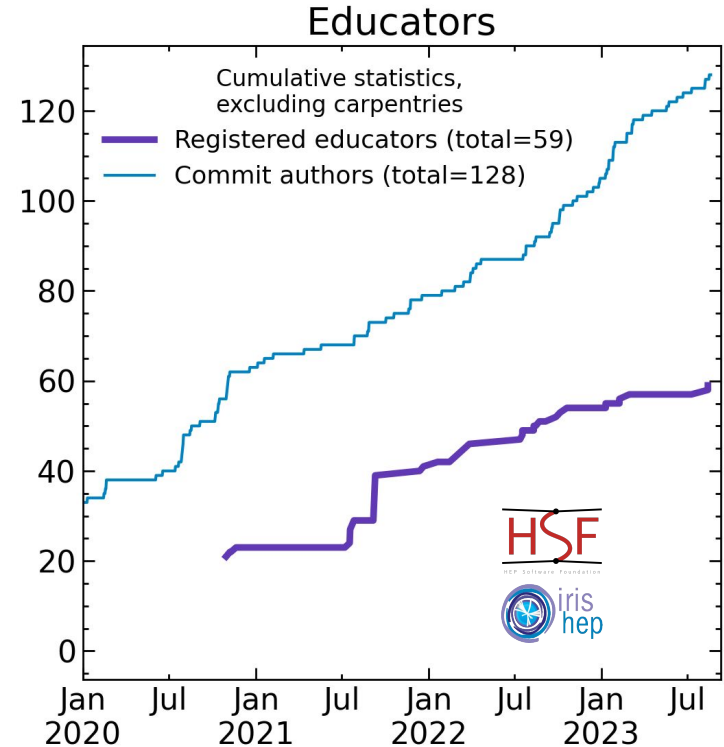
- **20%** of HEP Ph.D. students received advanced training
- **20%** of HEP Ph.D. students have supported one of the workshops

Sustainability

Training requires significant personpower:

- **Authors** who create new material
- **Instructors** who teach
- **Mentors** who support the events
- **Facilitators** who organize events

Scaling up (and even sustaining) the current effort **will not be possible without new faces.**



Finding contributors & contributions

IRIS-HEP fellows

- **Experience:** two 1 month FTE training fellows in 2023, but of limited success (not enough prior knowledge)
- **Plans:** “Hybrid fellows” combining technical work with training activities (won’t work for all projects)

Collaborations with Experiments

Experience: Generally prioritize experiment specific material; bystander effect

Topical groups

- **Idea:** Bringing together people who already train and try to create something universal together
- **Experience:** Currently trying with training on Generators

In-person hackathon to work on material

Idea: Easier to get real commitment in-person; hackathon could be back-to-back with other event

Other volunteers

Experience: Generally looking for one-off contributions; not often experts in subject-matter

Bottom line

- **Need meaningful commitment from institute members**
- **Unlikely to happen without direct support (and pressure) from PIs**
- Example of “meaningful commitments”:
One year of 20% FTE of PhD Student (but everything counts)

Outreach

Outreach

Indico Category



Public

Europe/Zurich

S. Malik

[Home](#) [Create event](#) [Room booking](#) [My profile](#)[Home](#) » [Projects](#) » [IRIS-HEP](#) » [Software Sustainability Core](#) » [Outreach](#)

Outreach



Create event

Navigate

Parent category



This category falls under SSC. The Software Training events are that fall under SSC are listed here: [Home](#) » [Projects](#) » [HEP Software Foundation](#) » [Training Events](#)

July 2023

- 23 Jul - 29 Jul [Coding Camp 2 \(Fermilab\)](#)
- 10 Jul - 13 Jul [Coding Camp - Univ of Washington, Seattle](#)
- 10 Jul - 12 Jul [Coding Camp - Univ of Puerto Rico Mayaguez, PR \(Virtual\)](#)

June 2023

- 20 Jun - 21 Jun [Coding Camp 0 \(Virtual\)](#)
- 19 Jun - 22 Jun [Coding Camp - Rice University, Houston, TX](#)
- 05 Jun - 07 Jun [Coding Camp - University of Alabama, Tuscaloosa, AL](#)
- 05 Jun - 06 Jun [IRIS-HEP Python Training for CROEM teachers](#)

Managers

- Adam La Mee
- Guillermo Antonio Fidalgo Rodriguez

Materials



There are no materials yet.

Description of Coding Camps

Quarknet does (no IRIS-HEP involvement) for many years

- **Master Classes (1-day) - for students**
 - [Description here](#)
- **Data Camp (at Fermilab), week long**
 - [Description here](#)
 - started with using spreadsheets to analyze CMS data but now mostly has teachers code the analysis

Coding Camp 2 (at Fermilab and in person)- Week-long workshop for high school teachers on using Python to analyze HEP data in a Jupyter environment to use with their students (Data Camp and Coding Camp 1 level experience required/prerequisite), dives deeper and gives teachers who have participated in Coding Camp 1 the chance to gain expertise and become ready to learn about advanced topics like machine learning, AI, and quantum computing that are now at the fore in particle physics. Teachers experience FNAL facilities and tours as well. IRIS-HEP started finding this 2022 and 2023

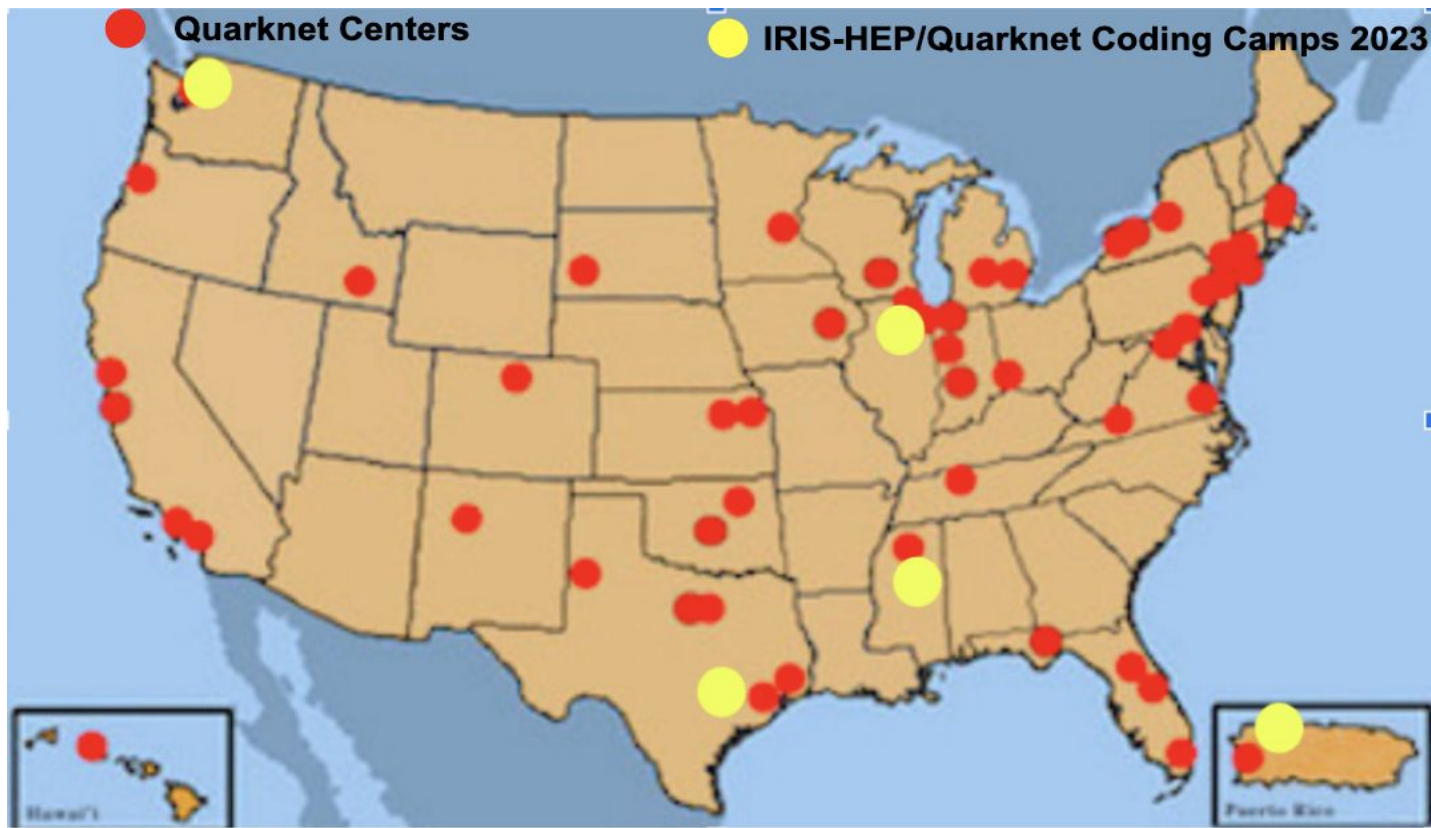
Coding Camp 1 or just Coding Camp (in person) - Three-day workshop for high school teachers with no coding experience. Led by QuarkNet teacher Fellows with support from IRIS-HEP.

- was established in 2020 to give teachers more direct experience in coding not only CMS data but other data that they can access online
- **We had 4 Coding Camp in Summer 2023 - Alabama, Rice, Washington, Puerto Rico**

Coding Camp 0 (virtual) - Two-day workshop for high school teachers with no coding experience. Led by QuarkNet teacher Fellows with support from IRIS-HEP

- [Description here](#)
- Similar as Coding Camp 1 but virtual

2023 Coding Camps and Coding Camp-2

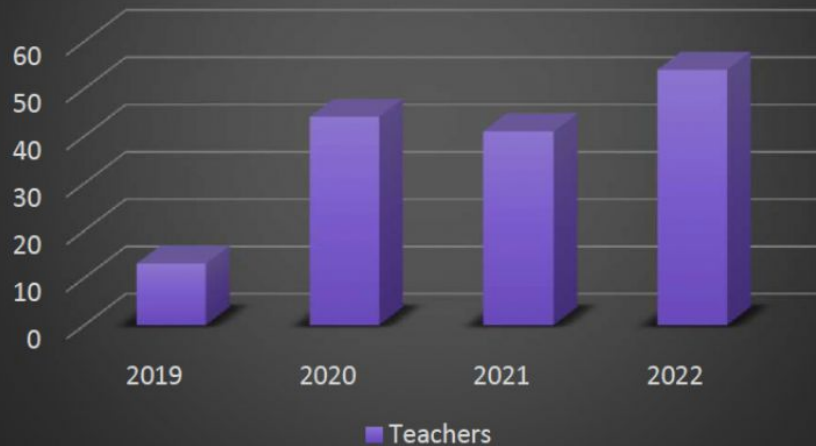


2023 stats

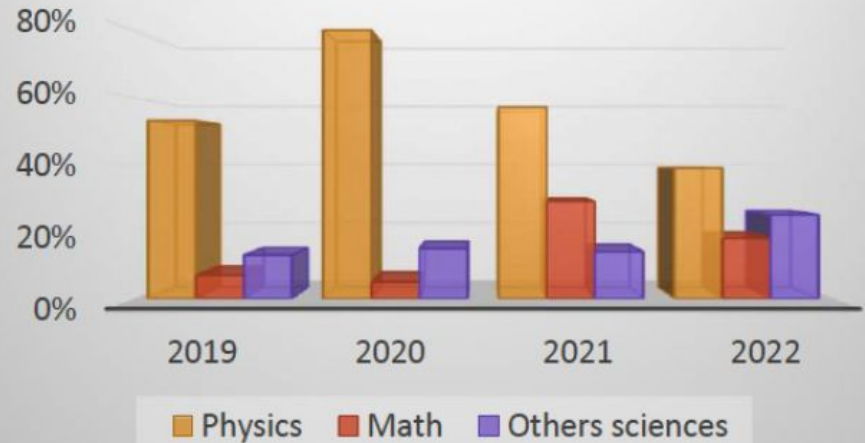
Type		Mentors	Teachers
Coding Camp 2 (FNAL)	In-person	5	15
Coding Camp 0	Virtual	4	6
Coding Camp (Rice)	In-person	2	13
Coding Camp (Alabama)	In-person	2	3
Coding Camp (Puerto Rico)	In-person	5	10
Coding Camp (Washington)	In-person	2	16

Up to 2022 stats

Summary of teacher's participation in coding activities held in the last years



Teachers – Participation and Specialty



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Breakout sessions

Training center/analysis gallery/snippet repo

Today 2pm

(creating a dedicated webpage to collect tutorials, examples, and more)

Scaling Up Training

Tuesday 9.30am

(how can we loop in a larger part of the institute in training activities/find more contributors)