



## The Italian Summer Students Program at Fermilab and other US

### Laboratories: 40 years of education in particle physics and technology

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In partnership with:



UNIVERSITÀ DI PISA



# Outline

## FERMI NATIONAL ACCELERATOR LABORATORY

- Italy @Fermilab (since early 80's)

## THE ITALIAN SUMMER STUDENTS PROGRAM AT FERMILAB

- Students' Recruitment
- Training Programs
- Costs, Sponsorships, Students' Benefits
- Statistics (1983–2024)
  - 2020 and 2021 Programs (sadly) cancelled
  - 2022 Back To Work (21 Summer Students at Fermilab)
  - 2023 Performed extremely well (27 Summer Students at Fermilab)
  - 2024 Performed well (13 Summer Students at Fermilab)
- Internships at US Space Science Labs

## CONCLUSIONS

# Italy @Fermilab, some history

## COLLIDER DETECTOR AT FERMILAB (CDF), SINCE EARLY 80's

- ~100/600 Italian scientists in the years 2000-2010

**BOLOGNA, FRASCATI, PADOVA, PAVIA, PISA, ROMA, SIENA, TRENTO, TRIESTE, UDINE (INFN DEPARTMENTS and UNIVERSITIES)**

- 5 Co-Spokesperson from Pisa

**~100 MASTER + 35 PhD THESES**

**The 2019 HEP prize of the EPS was awarded to the CDF and D0 Collaborations for the discovery of the top quark (1995)**



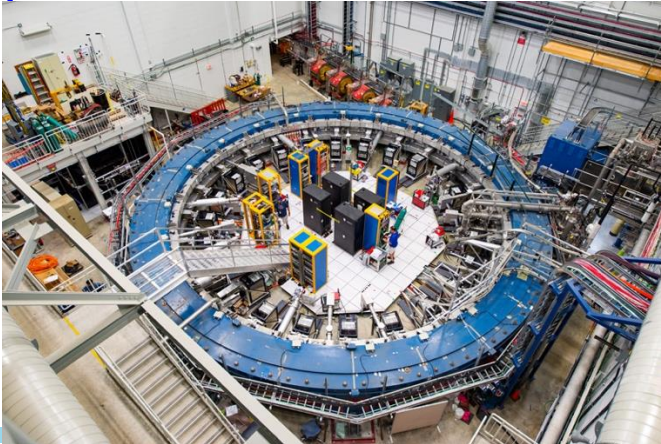


# Italy @Fermilab, as of today

## NEW LAB'S ENDEAVOURS

- **Muon (g-2)**: Measurement of the anomalous muon magnetic moment
- **Mu2e**: Muon to electron conversion experiment
- **Icarus, SBN, DUNE**: Short/Long-baseline neutrino experiments
- ~150 Italian scientists (Muon g-2, Mu2e, Icarus, DUNE Co-Spokesperson)

**BOLOGNA, CATANIA, FERRARA, FRASCATI, GENOVA, GRAN SASSO, LECCE, MILANO, NAPOLI, PAVIA, PADOVA, PISA, ROMA, TRIESTE, UDINE (INFN DEPARTMENTS and UNIVERSITIES)**



# Students' Recruitment

## INTERNATIONAL PROGRAM

- Applications from most Italian and some European Universities

## MASTER STUDENTS

- Physics/Applied Physics
- Engineering, Materials Science
- Computer Science

## ADMISSION

- Curriculum Vitae
- Recommendation Letters
- Motivation Letter
- Interview
- Good knowledge of English



# Training Programs

## AUGUST – SEPTEMBER (9 WEEKS)

### PROGRAMS FOR PHYSICISTS

- Design, construction, commissioning of particle detectors/accelerators
- Simulation of particle detectors/accelerators and particle physics experiments
- Analysis of data collected by particle physics experiments

### PROGRAMS FOR ENGINEERS

- Design/Test of particle detectors/accelerator components
- Design/Test of superconducting materials and magnets for particle accelerators
- Development of fast electronics components/high precision mechanics
- Development of advanced computing infrastructures

### UNIVERSITY CREDITS (acknowledged by the UNIPI Summer School)

- 6 ECTS credits (ECTS, European Credit Transfer and Accumulation System)

# Applicants Benefits

## WHAT FERMILAB PROVIDES

- Weekly stipend
- Free housing in Fermilab Dorms
- Free shared rental car
- Total cost ~17000 \$/student

## WHAT FERMILAB DOES NOT PROVIDE

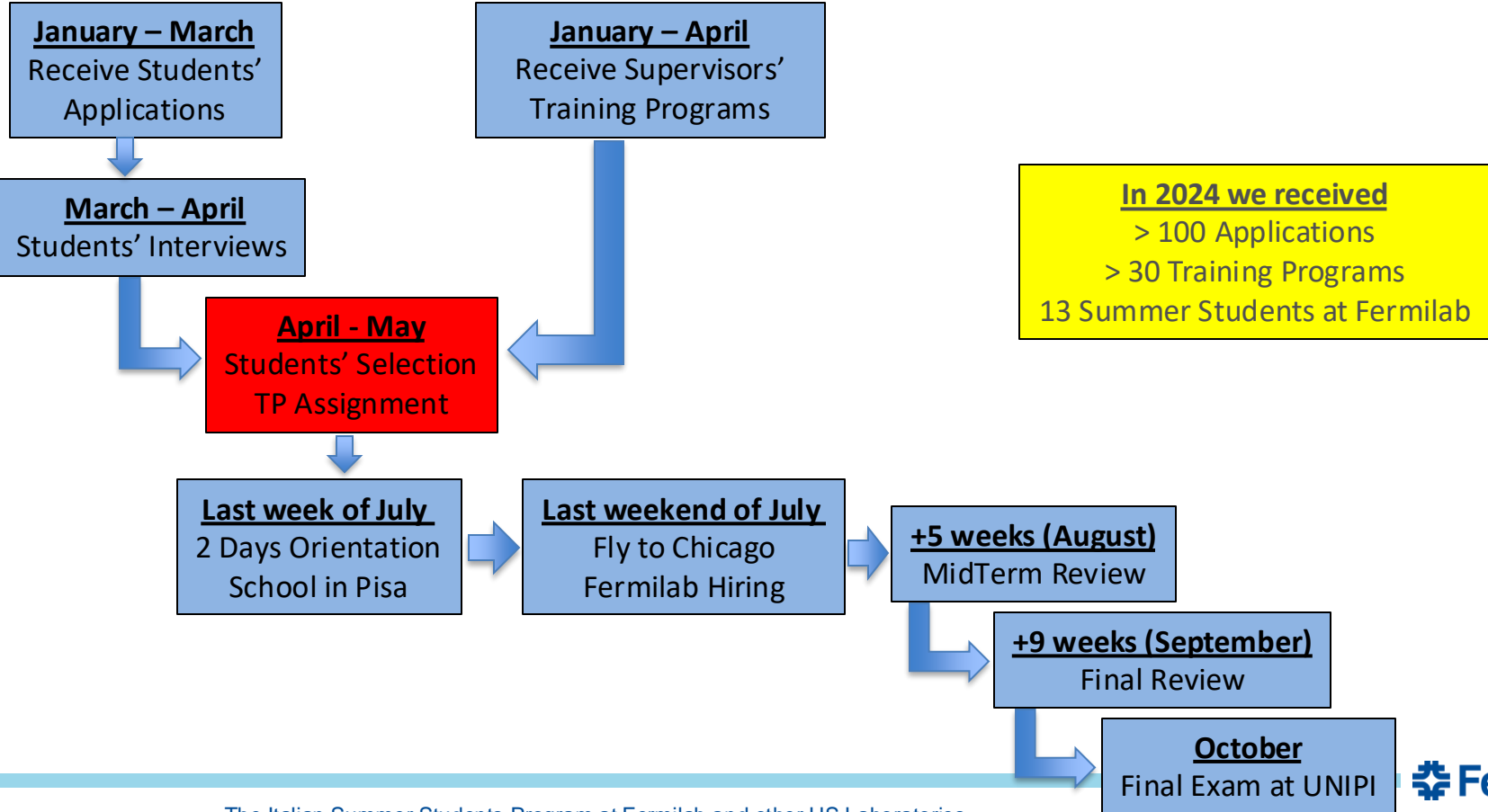
- Round-trip journey from Italy to Chicago
- Health insurance: mandatory

## STUDENTS' TO-DO LIST

- Valid passport
- Employment and J1 Visa bureaucracy with the help of Fermilab's administrative offices

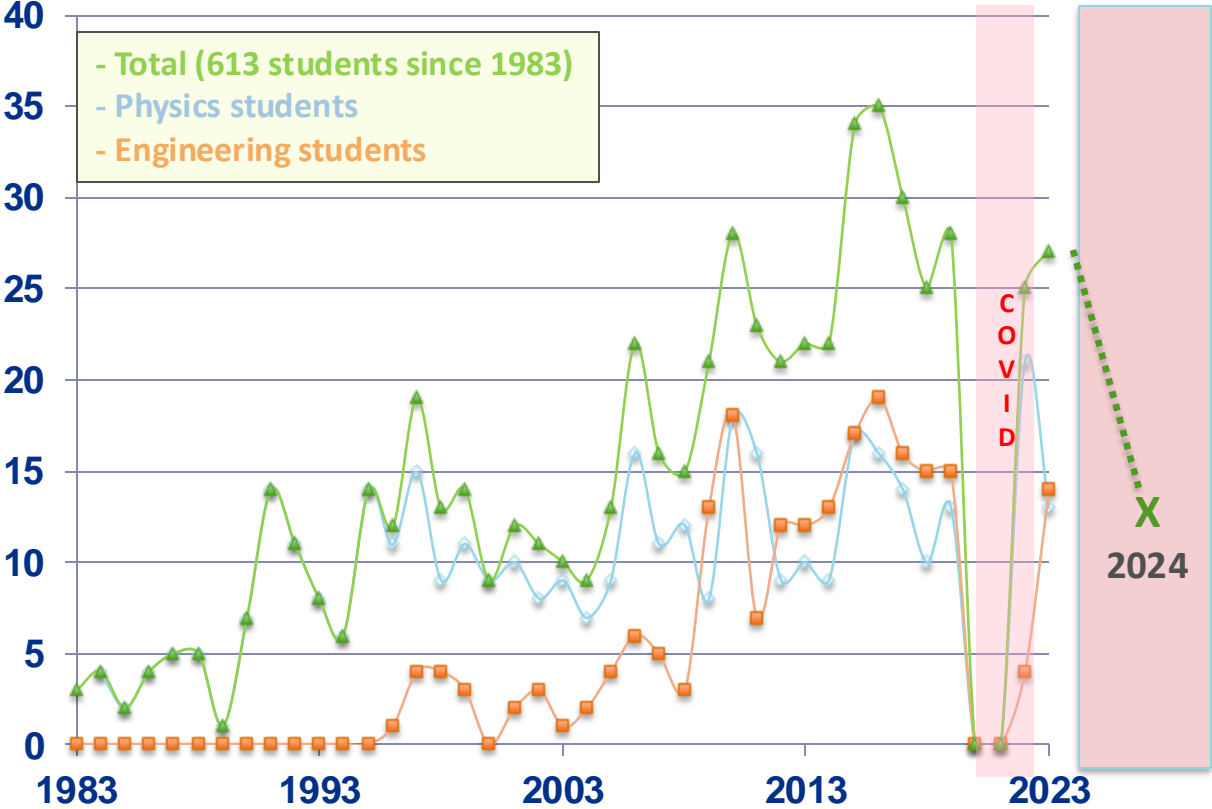


# Important Actions/Dates





# Summer Students Statistics (1983 – 2024)



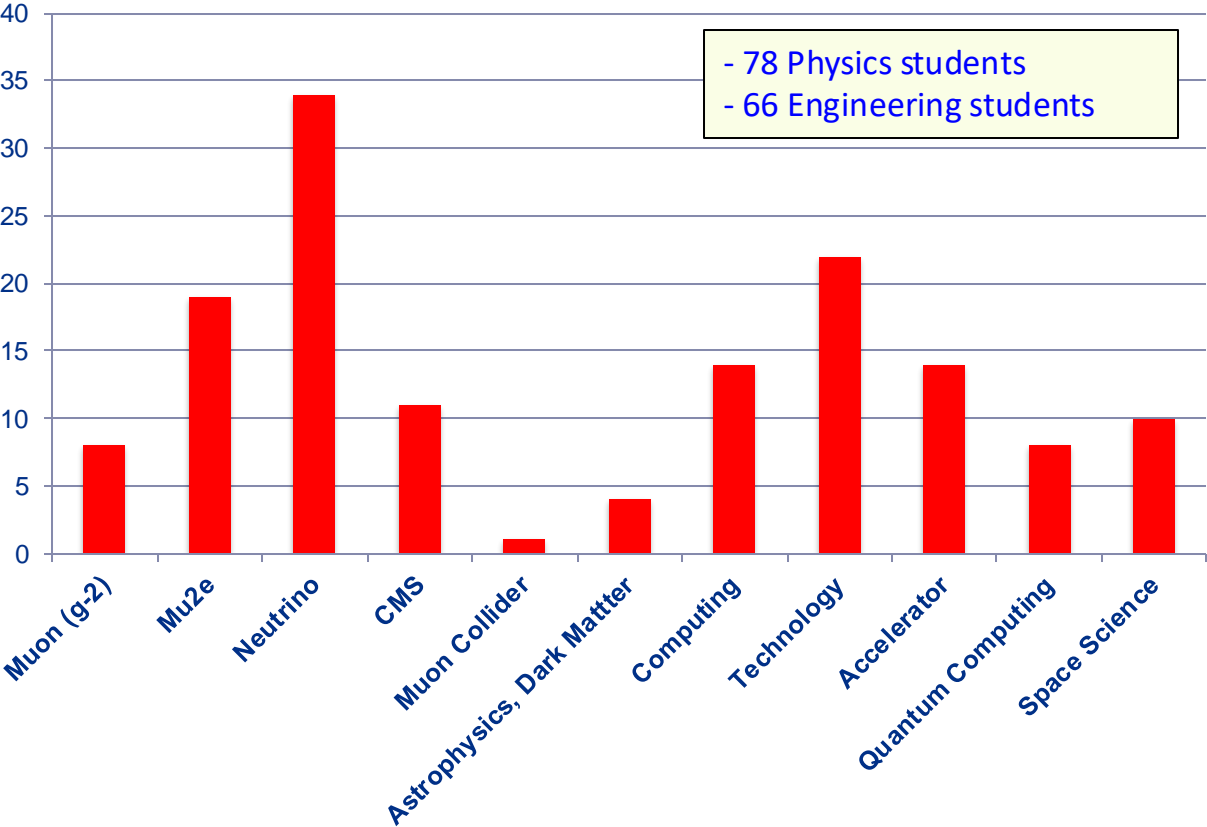
# Summer Students Statistics (1983 – 2024)

<b>Involved Universities (1983-2024)</b>	<b>613 students</b>
Pisa	52%
Roma	10%
Padova	8%
Milano	8%
Bologna	7%
Torino	2%
Trieste	2%
Napoli	2%
Ferrara	1%
Cassino	<1%
Udine	<1%
Siena	<1%
Firenze	<1%
Parma	<1%
Palermo	<1%
Messina	<1%
Lecce	<1%
L'Aquila	<1%
Ancona	<1%
Bari	<1%
Genova	<1%
International	1%

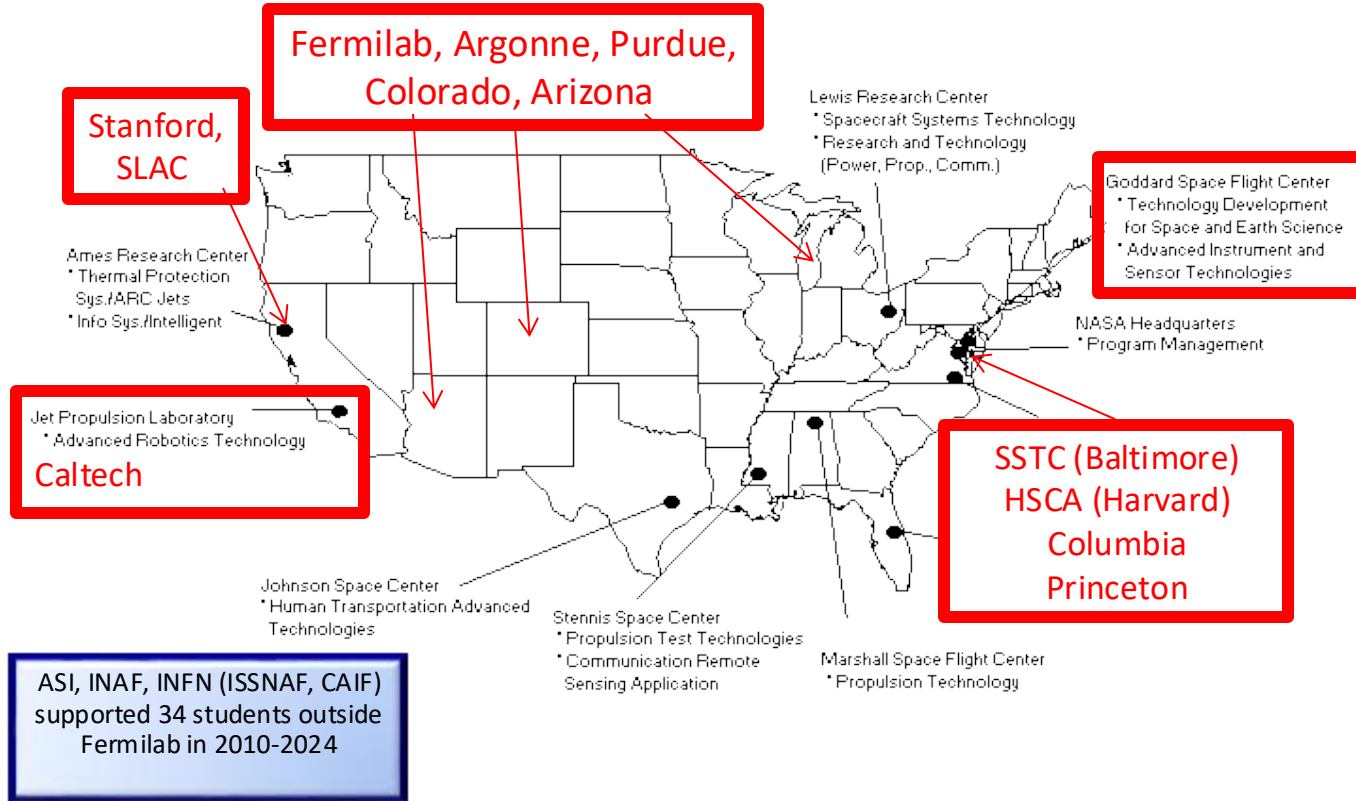


<b>Training Programs (2008-2024)</b>	<b>333 students</b>
Particle Physics & Neutrino	62%
Technology	20%
Accelerator	10%
Computational Science/AI	8%

# Training Programs (2017-2024, last 6 “years”)



# Internships at Space Science Labs



# Conclusions

## THE ITALIAN SUMMER STUDENTS PROGRAM AT FERMILAB

- A multi-disciplinary 9-week internship for Physics and Engineering students
- Hands-on training on Fermilab high-tech research
- 2024 program just concluded (13 Summer Students)

## ~600 SUMMER STUDENTS IN THE PROGRAM SINCE 1983

- Many former Summer Students have developed their career at Fermilab with a Master Thesis and a PhD

