

The Italian Summer Students Program at Fermilab and other US Laboratories



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Outline

FERMI NATIONAL ACCELERATOR LABORATORY

- Italy @Fermilab

THE SUMMER STUDENTS PROGRAM

- Recruitment
- Training Programs
- Costs and Sponsorships
- Statistics (1984–2019), the 2020 Program was canceled
- Internships at Space Science Labs

CONCLUSIONS

Fermilab Organization

PARTICLE PHYSICS & NEUTRINO DIVISIONS

- Design Lab's particle physics & neutrino experiments

ACCELERATOR DIVISION

- Develop new accelerator techniques
- Provide beams for Lab's experiments

TECHNICAL DIVISION

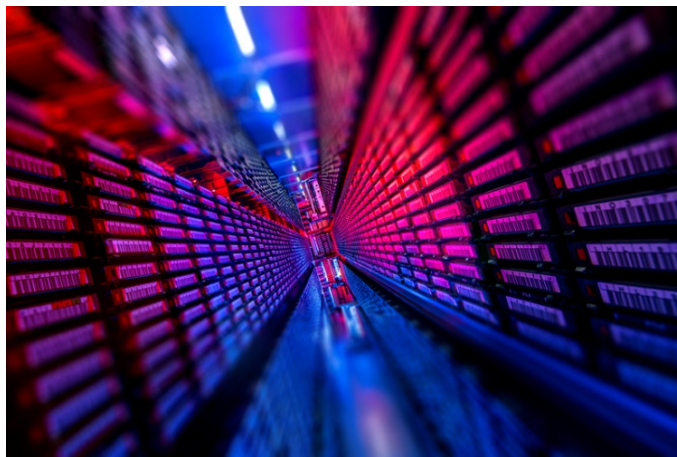
- Develop technologies for particle experiments

SCIENTIFIC COMPUTING DIVISION

- Provide infrastructures for data handling/analysis

~1800 EMPLOYEES + THOUSANDS OF VISITORS

Feynman
Computer
Center



Italy @Fermilab, some history

COLLIDER DETECTOR AT FERMILAB (CDF), SINCE 1984

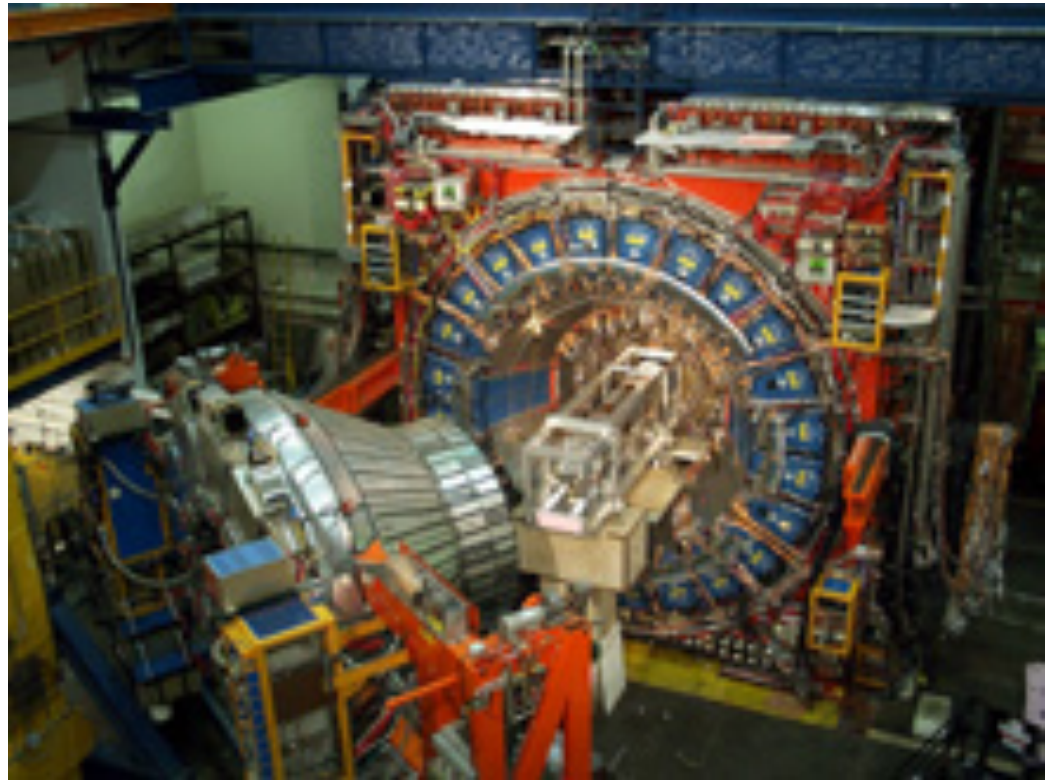
- ~100/600 Italian scientists in the years 2000-2010

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

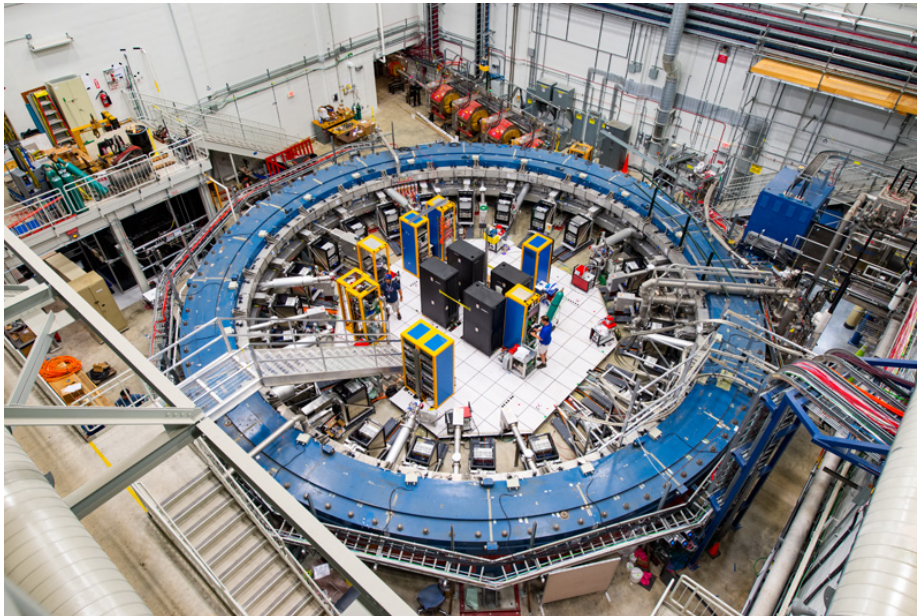


Italy @Fermilab, as of today

NEW LAB's ENDEAVOURS

- **Muon (g-2)**: Measurement of the anomalous muon magnetic moment
- **Mu2e**: Muon to electron conversion experiment
- **Icarus, DUNE**: Short/Long-baseline neutrino experiments
- ~140 Italian scientists

BOLOGNA, CATANIA, FERRARA, FRASCATI, GENOVA, GRAN SASSO, LECCE, MILANO, NAPOLI, PAVIA, PADOVA, PISA, ROMA, TRIESTE (INFN 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
- 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

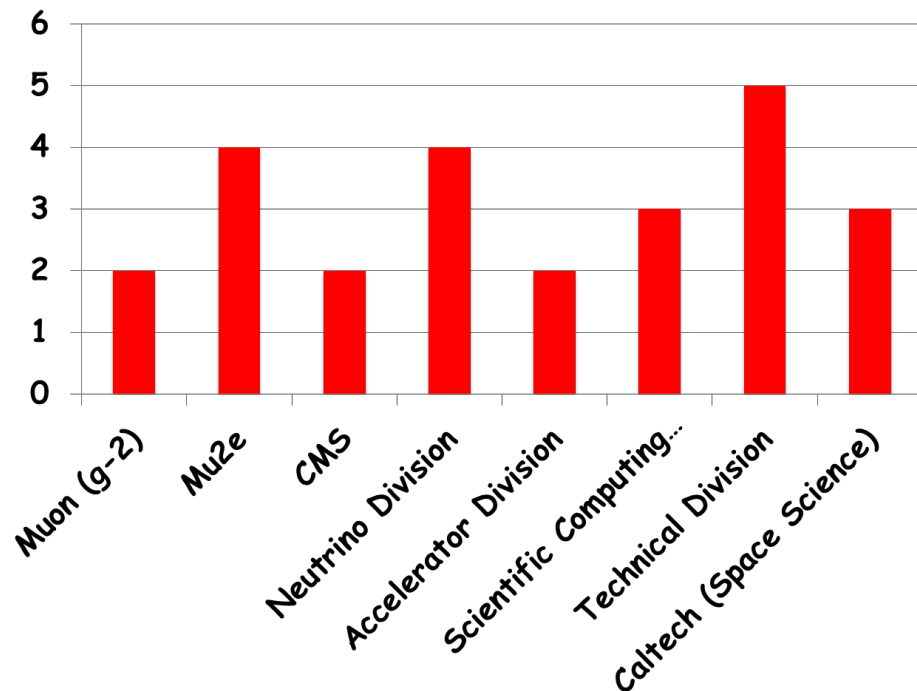
- Design/Test of particle detectors/accelerator components
- Design/Test of superconducting materials and magnets for particle accelerators
- Development of fast electronics components/high precision mechanics
- Development of advanced computing infrastructures

UNIVERSITY CREDITS (since UNIPi Summer School creation in 2015)

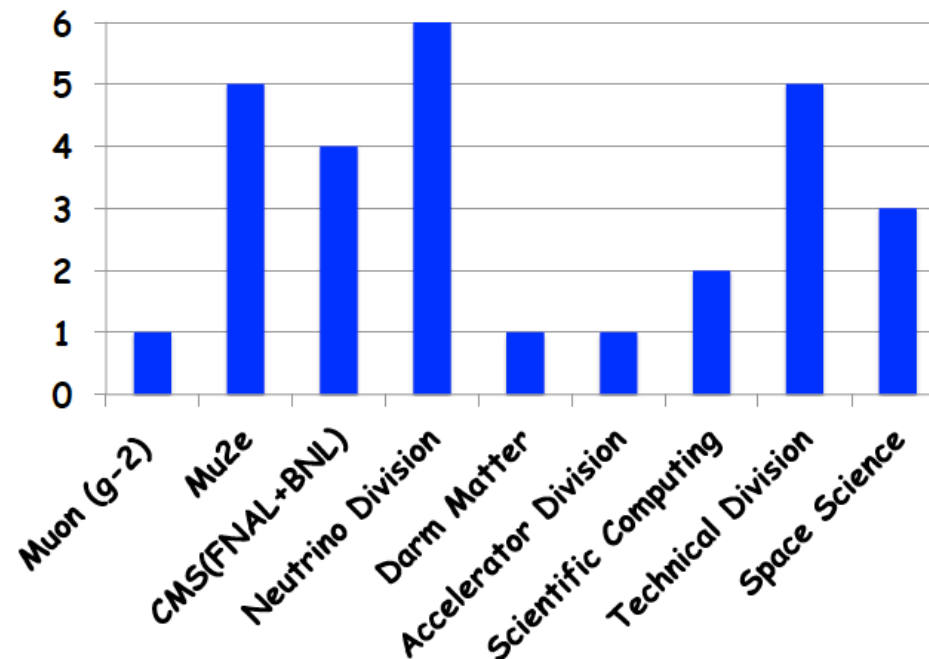
- 6 ECTS credits (ECTS, European Credit Transfer and Accumulation System)

Training Programs (2018-2019)

2018: 10 Physics + 15 Engineering



2019: 13 Physics + 15 Engineering



Sponsorships

0\$ COST FOR THE STUDENT, ~9,000\$ FOR THE SPONSOR

- Department Of Energy at Fermilab
- Italian National Institute of Nuclear Physics
- Sant'Anna School of Advanced Studies (Pisa)
- Italian Space Agency (ASI), and Italian National Institute of Astrophysics (INAF, in 2010-2011) sponsors internships at US Space Science Labs
- University of Pisa

Costs

WHAT FERMILAB PROVIDES

- Weekly salary: ~400 \$
- Free housing in Dorm
- Shared rental car
- Total cost ~9000 \$/student

WHAT FERMILAB DOES NOT PROVIDE

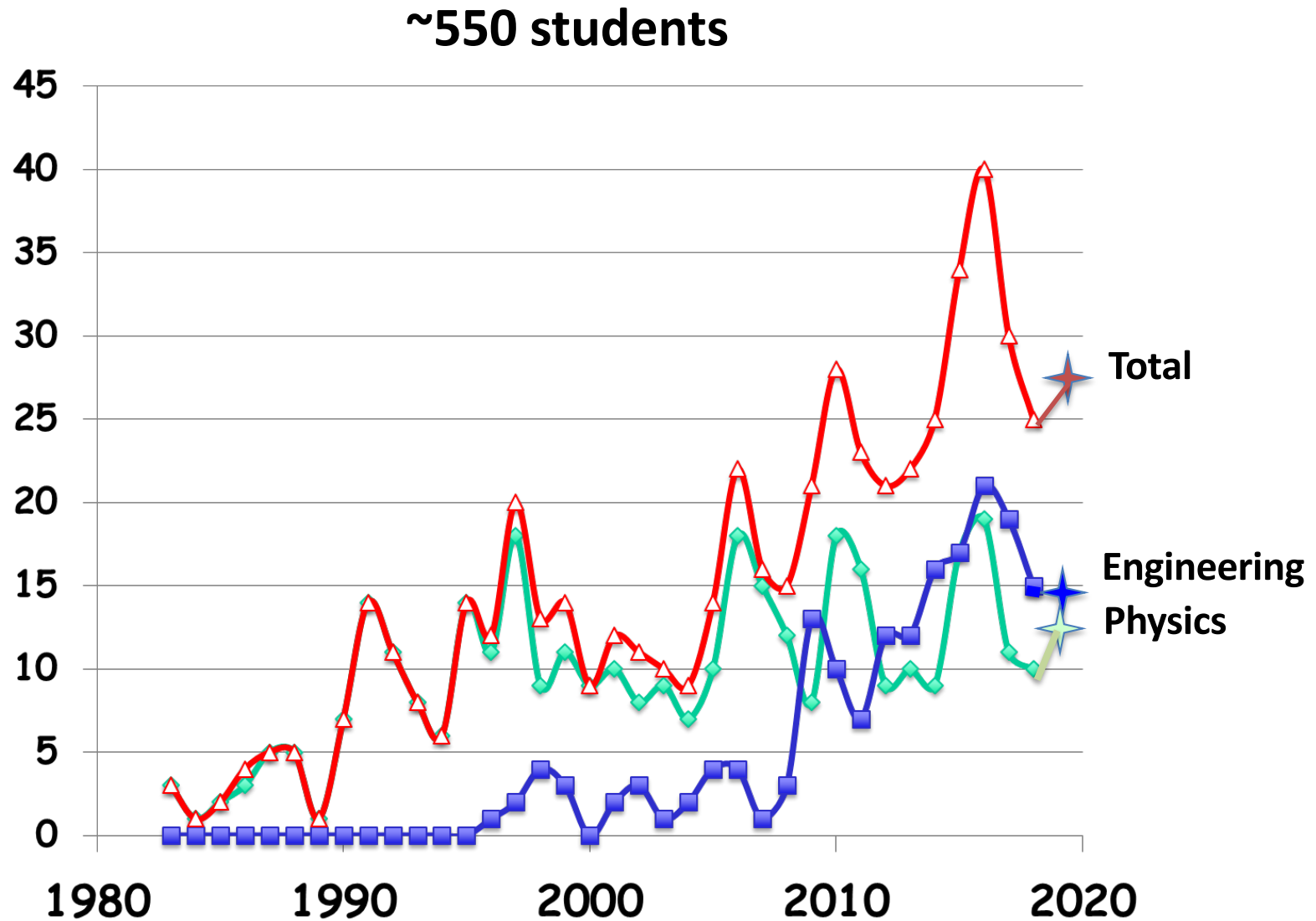
- Round-trip journey from Italy to Chicago
- Health insurance: mandatory

STUDENTS' TO-DO LIST

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

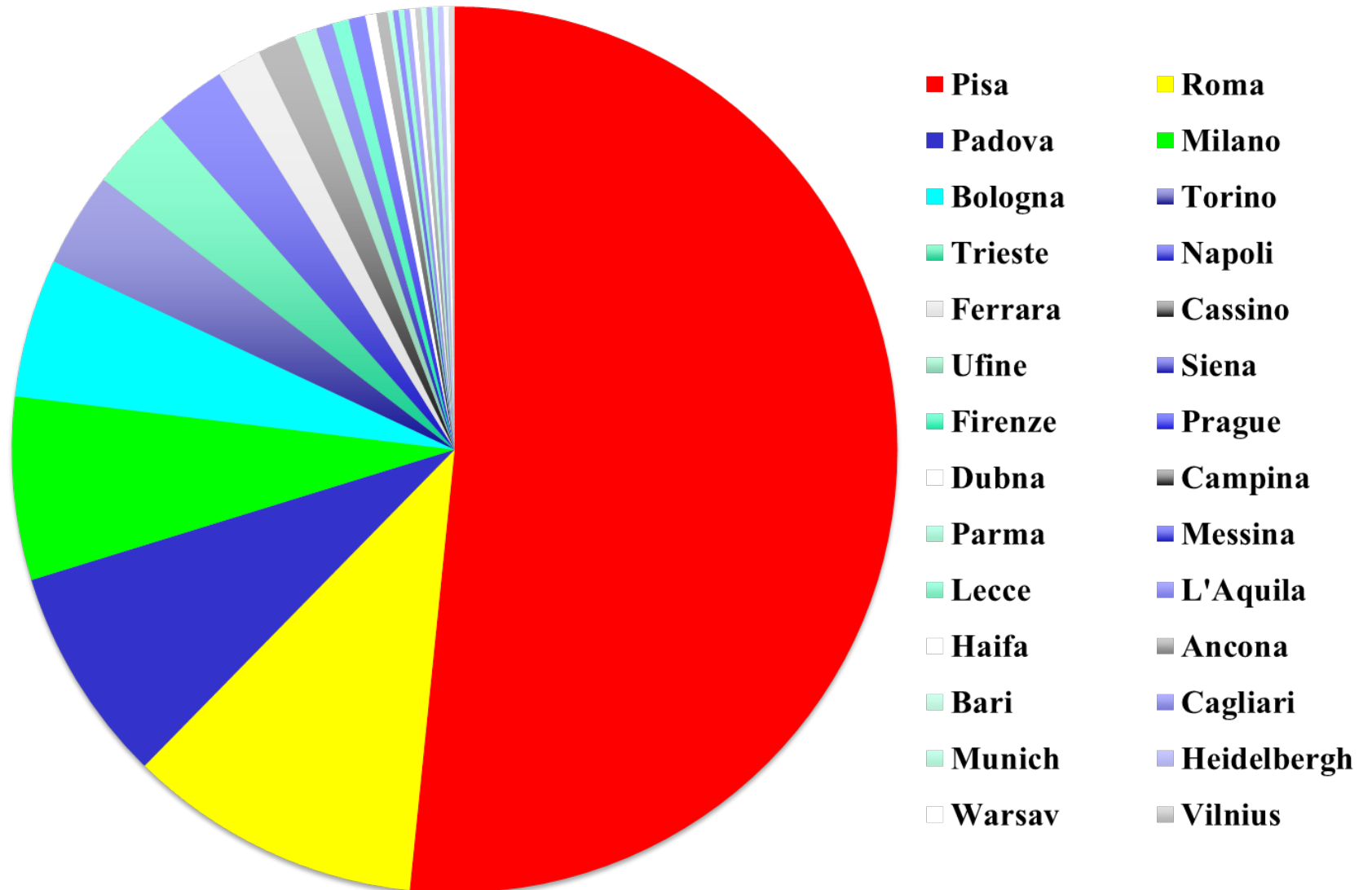


Students Statistics 1984 - 2019

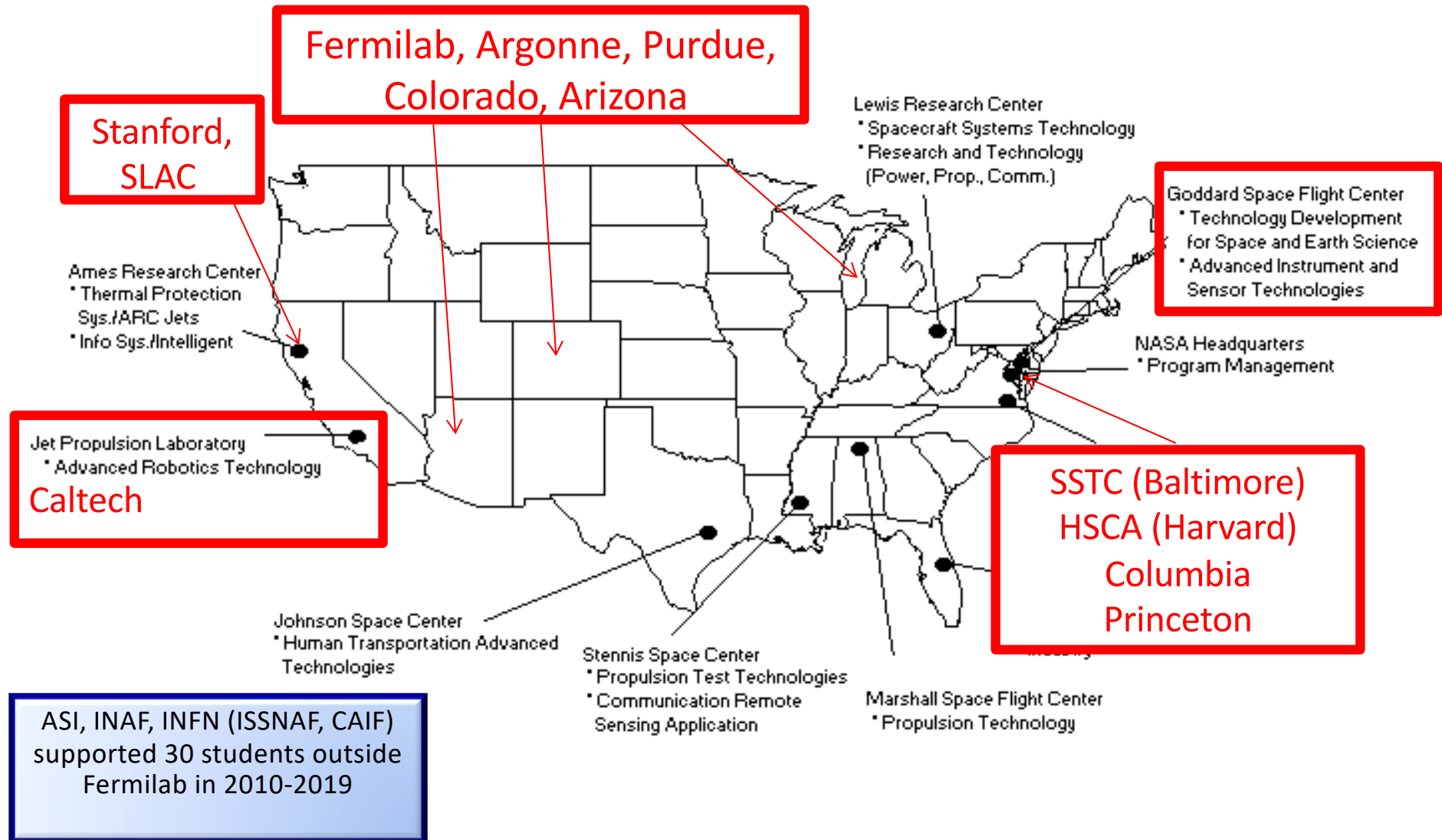


Involved Universities 1984 – 2019

~550 students



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

~550 ITALIAN SUMMER STUDENTS SINCE 1984

- Many summer students developed their career at Fermilab with a Master Thesis and a PhD

