



National Science Foundation (NSF) Hispanic Serving Institution (HSI) Grant for Students from 14 California HSI institutions to work on ATLAS Experiment at LHC of CERN



Benefits

- Work with US national labs and universities on ATLAS experiment at CERN in Geneva, Switzerland or in the US during summers
- 16 students/summer; Up to ~\$8,000/student
- Work with ATLAS physicists from top research institutions from all over the world

Eligibility

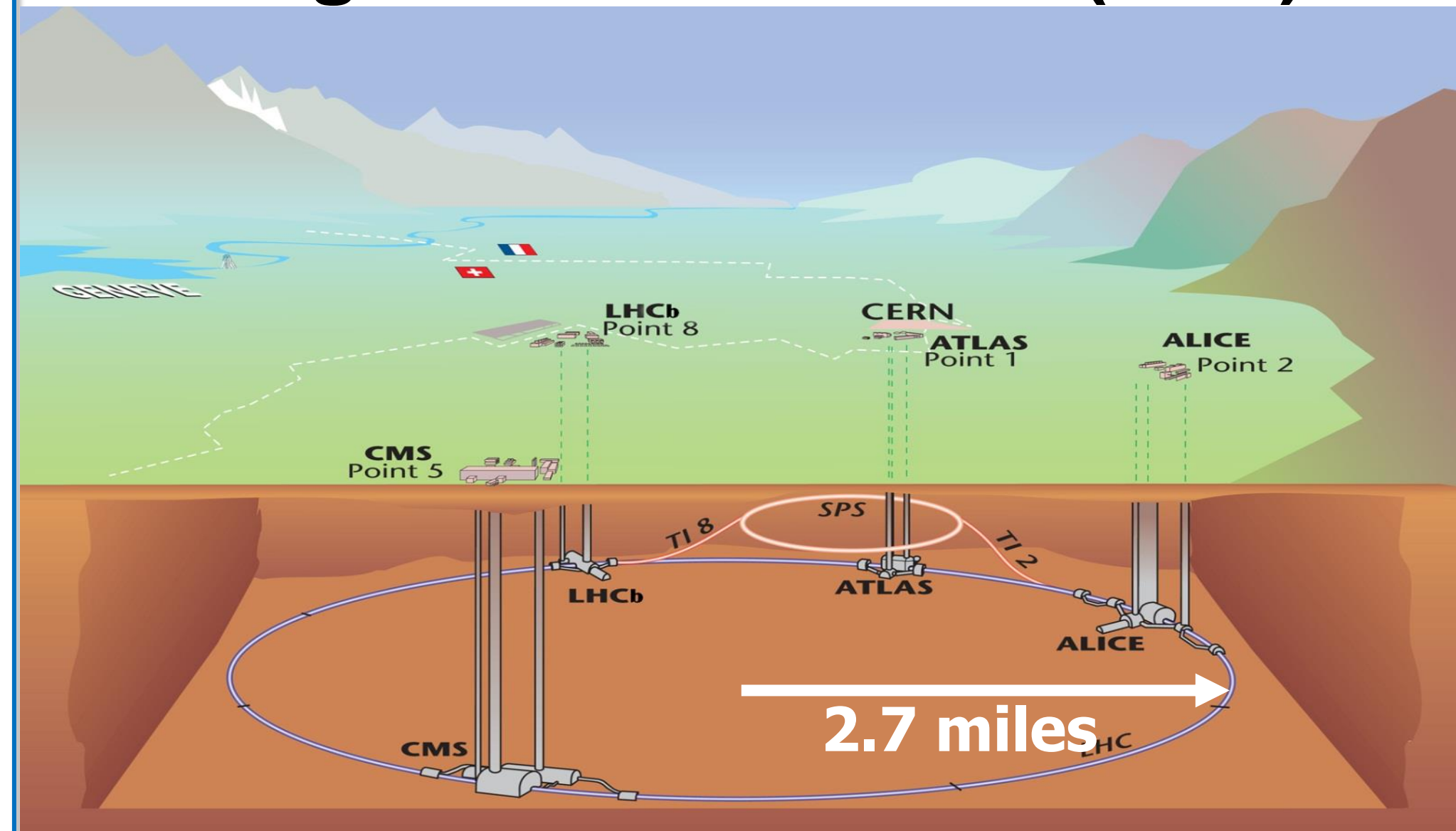
- Full-time physics UG or graduate students from CSU campuses (Channel Islands, Chico, Dominguez Hills, Fresno, Humboldt, Long Beach, Los Angeles, Northridge, Pomona, San Diego, San Francisco, etc.), Madera Community College, Modesto Junior College, and Santa Rosa Junior College
- Must be US Citizen or permanent resident
- Take online PHYS 163 with CSU Fresno in the fall semester (TTH 9:00 am to 10:15am)
- Submit full application by Dec. 15 deadline
- <http://zimmer.csufresno.edu/~yogao/ATLAS/>
- Women, minorities, first-generation college students **STRONGLY** encouraged to apply

CERN

- CERN stands for European Organization for Nuclear Research in French
- ~10,000 scientists from ~100 countries
- Birthplace of Nobel Prizes, World Wide Web

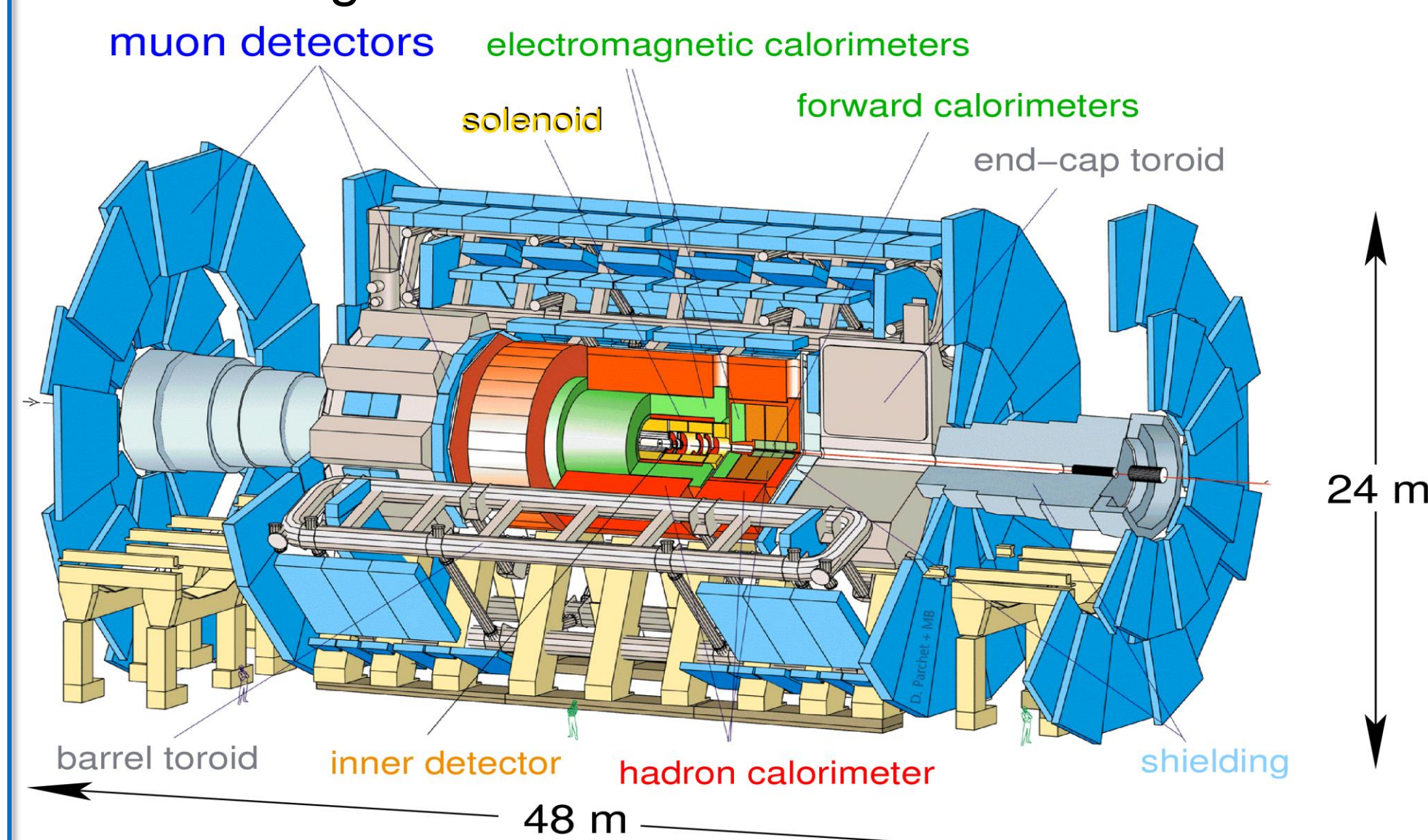


Large Hadron Collider (LHC)



ATLAS Detector

- Largest particle detector ever built
- > \$1 Billion (>\$250M from US DOE/NSF)
- Taking data since 2009

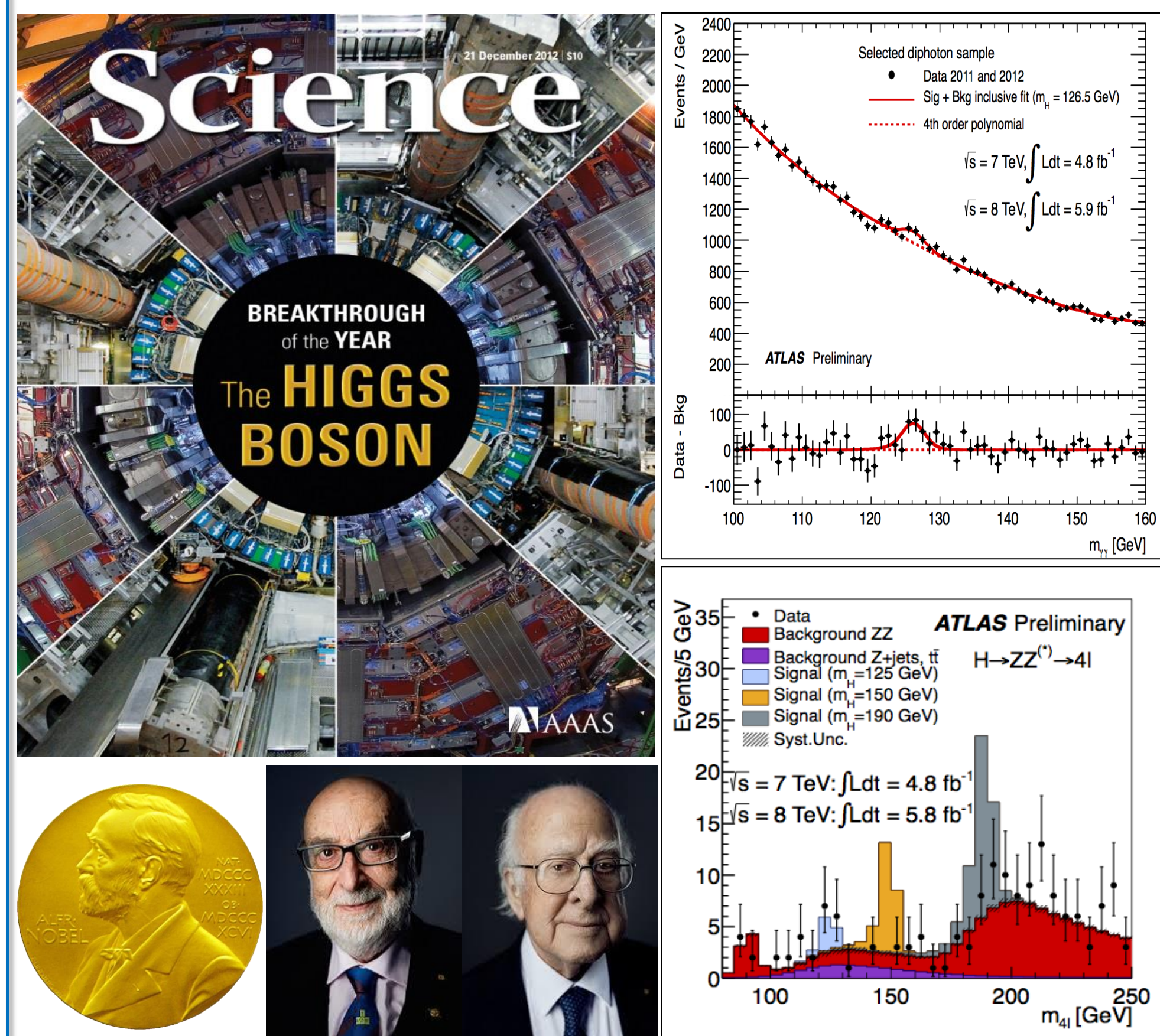


ATLAS Collaboration

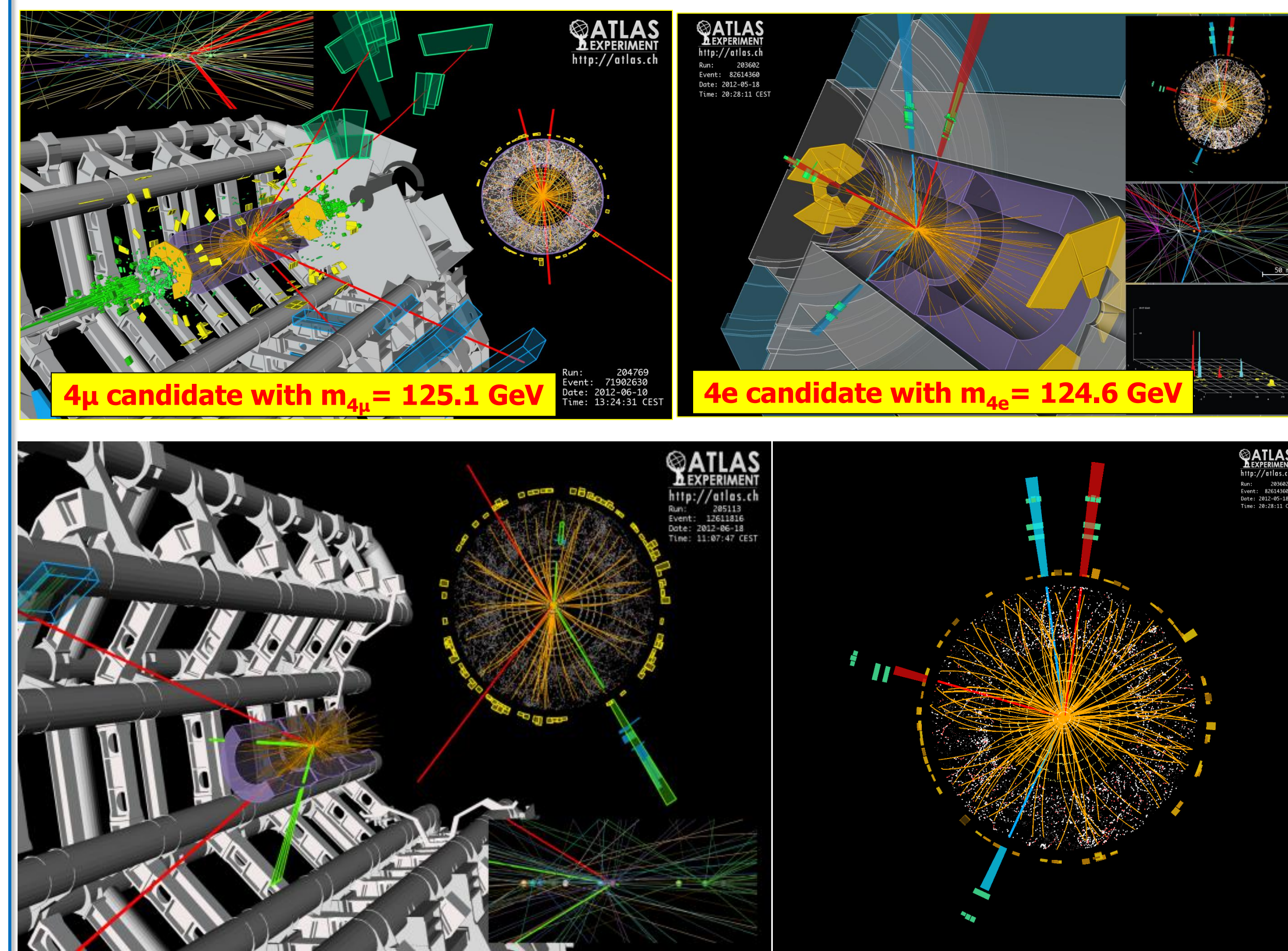
- ~3000 physicists from ~180 institutions of 38 countries all over the world
- ~500 physicists from ~40 US universities (Chicago, Columbia, UC-Berkeley, Duke, Harvard, UIUC, Michigan, MIT, MSU, NYU, Stanford, UPenn, UT-Austin, Washington, Wisconsin, Yale, etc.) and 5 US national labs (ANL, BNL, LBL, LLNL, and SLAC)
- **CSU Fresno joined ATLAS in 2007**

Discovery of Higgs ("God" particle) by ATLAS/CMS

- Named 2012 "Breakthrough of the Year" by Science magazine
- Resulted in award of 2013 Nobel Physics Prize to the Higgs theory
- **CSU Fresno: Only CSU campus involved in the Higgs discovery, first research a CSU was involved in which has resulted in a Nobel Prize**



Higgs ("God" particle) Candidate Events



CSU Fresno ATLAS & NSF HSI

- Faculty/PI: Prof. Yongsheng Gao (2007 to present)
- Master and undergraduate students
- Strong support from CSU Fresno Provost, CSM, FSSRA, Instructionally Related Activities (IRA), ORSP, etc.
- 3 NSF Elementary Particle Physics (EPP) grants (\$1,531K) since 2009, including \$460K EPP grant from 2009 to 2012 which was the first NSF EPP grant to a CSU campus
- \$620K NSF Major Research Instrumentation (MRI) grant (2010 to 2012): CSU Fresno (only lead institution) with 8 subcontractors: U. of Chicago, Columbia U., Hampton U., Michigan State U., Northern Illinois U., New York U., Stony Brook U., and U. Washington
- 2 NSF International Research Experience for Students (IRES) grants (\$550K) which supported 33 CSU students to work at CERN during summers from 2016 to 2023
- **\$802K NSF HSI grant (4/2024 to 3/2027) to support 48 students (16 students per summer) from 14 California HSI institutions to work on ATLAS experiment at LHC of CERN during summers of 2025 to 2027**
- Reported by ABC-30, CBS-47, KSEE-24, Fresno Bee, Valley NPR, etc.
- **Contact: Dr. Yongsheng Gao (Tel: 559-278-4554)**
Email: yogao@csufresno.edu
Web: <http://zimmer.csufresno.edu/~yogao/ATLAS/>
- **NSF HSI project liaison faculty members:** Dr. Kevin Hayakawa (CSU, Channel Islands), Dr. Eric Ayars (CSU, Chico), Dr. Miguel Rodriguez (CSU, Dominguez Hills), Dr. Charles Hoyle (CSU, Humboldt), Dr. Subhash Rajpoot (CSU, Long Beach), Dr. Konrad Aniod (CSU, Los Angeles), Dr. Li Gao (CSU, Northridge), Dr. Qing Ryan (CSU, Pomona), Dr. Shohreh Abdolrahimi (CSU, Pomona), Dr. Usha Sinha (CSU, San Diego), Dr. Maarten Golterman (CSU, San Francisco), Mr. Gerald Rude (Madera Community College), Mr. Dan Chase (Modesto Junior College), Dr. Leon Hsu (Santa Rosa Junior College)

Students at CERN



Student Success

- 6 to 13 students from CSU campuses to CERN every summer from 2008 to 2023. Over 100 CSU students from 14 CSU campuses have worked at CERN so far
- Presentations at international ATLAS Working Group meetings, national/regional conferences, attended famous CERN Summer Student Lecture Series given by top physicists of the world
- Moved on to teaching, high-tech companies, and Ph.D programs (UC-Berkeley, UCLA, UCSD, UCSC, UCD, UCM, UCR, USC, Brown, Colorado, Indiana, Iowa, Kansas State, Maryland, Michigan, Umass, Ohio State, Oregon, Purdue, Washington, Wisconsin, Hamburg, CEA Saclay, HEPHY Vienna, etc.)
- **ATLAS/CERN working experience prepares students for their personal and professional success in an increasingly competitive, global, and multi-cultural society**