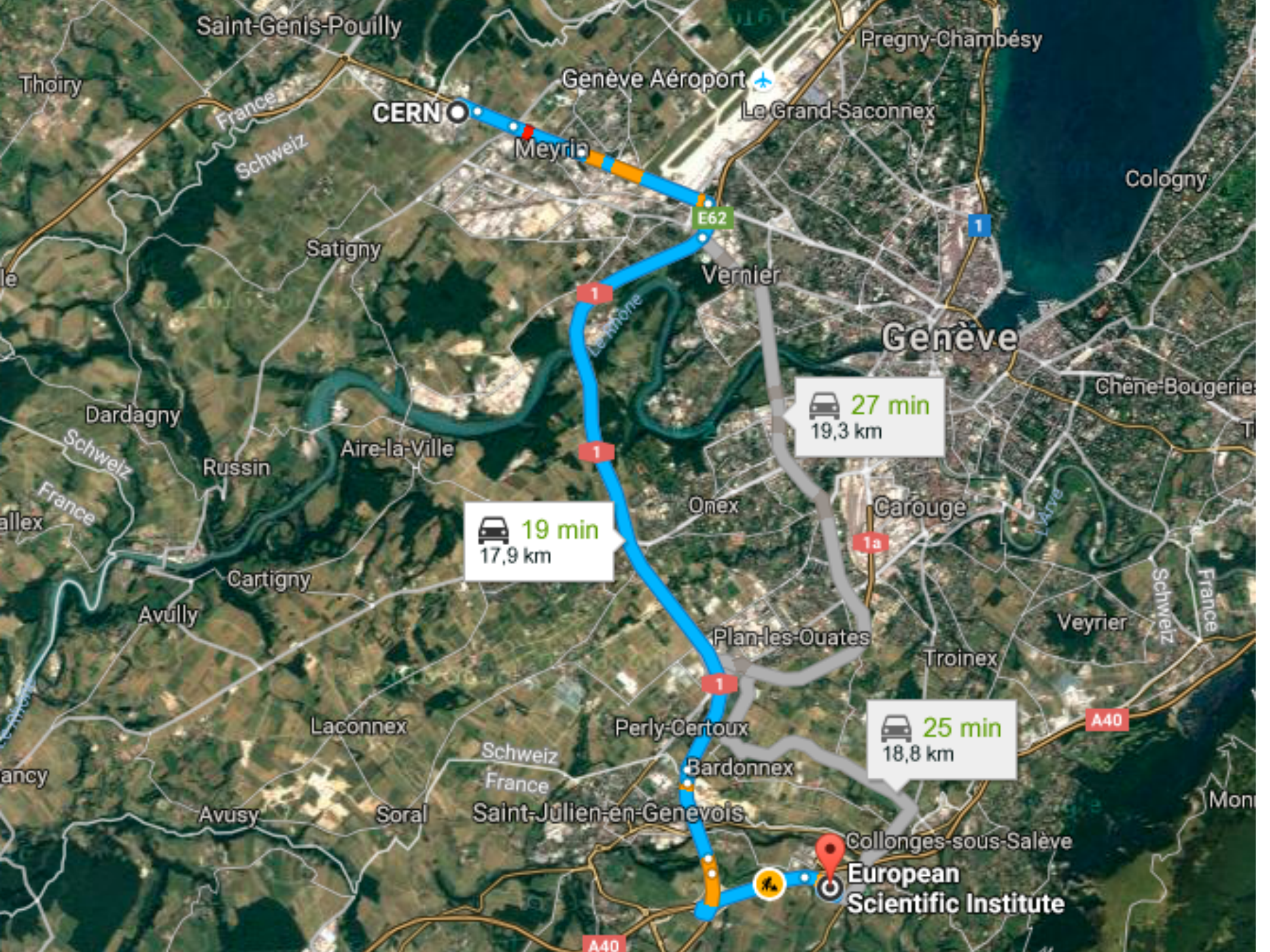
European School of Instrumentation in Particle and Astroparticle Physics

http://www.esi-archamps.eu/Thematic-Schools/ESIPAP


Saint-Genis-Pouilly
Thoiry
France
Schweiz
CERN
Meyrin
Genève Aéroport
Pregny-Chambésy
Le Grand-Saconnex
Cologny
E62
1
Satigny
Vernier
Le Rhône
Genève
Chêne-Bougeries
27 min
19,3 km
Dardagny
Schweiz
France
Russin
Aire-la-Ville
19 min
17,9 km
Onex
Carouge
1a
L'Aire
Cartigny
Avully
Veyrier
Schweiz
France
Plan-les-Ouates
Troinex
A40
Laconnex
Perly-Certoux
25 min
18,8 km
Schweiz
France
Bardonnex
Avusy
Soral
Saint-Julien-en-Genevois
Collonges-sous-Salève
European
Scientific Institute

Objectives

- To create THE reference school in HEP instrumentation in the vicinity of CERN (Archamps), the focal point of our community (like JUAS for accelerators)
- To prepare the next generation of young physicists who will carry out HL-LHC upgrades and many other major experimental projects
- Very broad & intensive school with real exams : ECTS (2 x 8)
  2 independent modules of 4 weeks each
  Lab sessions at CERN and in Grenoble
- 5-year target : recruit 32 students per year at international level
- To mix Master & PhD students and establish international social links

Module 1 : Physics of particle & astroparticle detectors

Inaugural lesson on Dark Matter Particles : Uwe Oberlack (Johannes Gutenberg University Mainz)

Experimental particle physics (15 h) : Marco Delmastro LAPP (ATLAS)
Experimental cosmology (9 h) : Juan Macias-Perez LPSC (Planck)
Experimental astoparticle physics (6 h) : François Montanet LPSC (Auger)
Interaction of particles with matter (6 h) : Lucia Di Ciaccio LAPP (ATLAS)
C++ programming (6 h) : Éric Chabert IPHC (CMS)
Reminder on probability and statistics (3 h) : Alexandre Ghelfi LPSC (DARK)
MVA Analysis & boosted decision trees (6 h) : Yann Coadou CPPM (ATLAS)
Tracking (6 h) : Jérôme Baudot IPHC (CMOS & ILC)
Calorimetry (6 h) : Isabelle Wingerter LAPP (ATLAS)
Muon detection (6 h) : Laurent Chevalier IRFU (ATLAS)
Radioprotection (3 h) : Helmut Vincke CERN (radioprotection group)
Imaging & Cerenkov detectors (4.5 h) : François Montanet LPSC (Auger)
Detector simulation (6 h) : Alberto Ribon & Witold Pokorski CERN (G4 collab)
Particle identification (3 h) : Guillaume Unal CERN (ATLAS)
Computing sessions (12 h) : Éric Chabert & Éric Conte IPHC (CMS)
Lab sessions (14 h) : 12 people from CERN ! I can't list them all, my apologies !
Exams (10 h) !

https://indico.cern.ch/event/472305/

30 experienced professors and tutors

~110 hours of lectures tutorials & labs

Module 2 : detector technologies & applications

Detector technologies (7.5 h): Jean-Marie Brom IPHC (CMS)
-Working principles, gazeous detectors, semiconductor detectors, scintillation , cerenkov and transition radiation detectors
Noble liquid detectors (3 h): Johann Collot LPSC (ATLAS)
Low temperature detectors (1.5 h) : Martino Calvo Néel Institute (PLANCK)
Electronics and signal processing (9 h) : Daniel Dzahini LPSC (ATLAS)
Project management (6 h) : Pierre Bonnal CERN (CERN project office)
Advanced C++ programming (9 h) : Sébastien Ponce CERN
TDAQ (9 h):
-VME bus : Markus Joos CERN
-Modular Electronics : Markus Joos CERN
-TDAQ software : Enrico Pascalucci (INFN Roma)
-FPGAs : Hannes Sakulin CERN
-Triggering : Francesca Pastore (Royal Holloway London)
Data handling technologies (6 h) : Roberto Pace CERN
Composite materials (9 h) : Jérôme Senmartin (Compositec
Magnets for particle detectors (4.5 h) : Herman Ten Kate CERN (ATLAS)
3D/additive printing (1.5 h) : Marc Krauth IPHC
Python programming (3 h) : Jérôme Odier LPSC
Grid computing (3 h) : Catherine Biscarat LPSC
Ultra cold neutron production and detection (6 h) : Guillaume Pignol LPSC (Granit)
Medical applications (6 h) : Ziad El Bitar IPHC
Space projects (4.5 h) : Jan Droz (CNES) and Isabelle Rongier (ASL/JTI)
Lab sessions (12 h) : people from CERN and Grenoble (can't list them all, apologies)
Exams (8 h)

Special conference on Gavitational waves detection by Loïc Roland from LAPP

https://indico.cern.ch/event/472786/

26 experienced professors and tutors

~100 hours of lectures, tutorials and labs

Already 3 years of experience

2014

2015

2016

Alumni from 17 countries already

ESIPAP 2017

- Module 1 : physics of particle and astroparticle detectors starts January 23, 2017
- Module 2 : detector technologies and applications starts March 20, 2017
- New : possibility to stay for shorter periods of a week or more
- Applications are open : http://www.esi-archamps.eu/Thematic-Schools/ESIPAP