

The 2017 HSSIP-France program

15th IPPOG Meeting – Pisa 19-21 April, 2018

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CERN



HSSIP

- **H**igh-**S**chool **S**tudent **I**nternship **P**rogram
 - A new project launched by CERN last year
 - **Two weeks long internship for 24 high-school students** from a CERN member state
 - Program in the **language of the member state**
- Currently **five such programs per year**
 - Hard to go beyond – cost, need to find enough rooms at the CERN hostels
 - In addition to all the existing programmes – e.g. Teachers Programmes
 - Programme to be run **about every five years** for a given member states
- **Schedule**
 - **2017**: Bulgaria, **France**, Hungary, Norway, Portugal
 - **2018**: Czech Republic, Israel, Poland, Sweden, The Netherlands
 - **2019**: Austria, Finland, Germany, Slovakia, Spain
 - **2020**: Belgium, Denmark, Greece, Italy, Romania
 - UK!? Switzerland!?

HSSIP-France 2017

- France pre-selected for the launch of HSSIP in Fall 2016
 - But **confirmation only at the end of March 2017**
→ Already quite late in the schoolyear!
 - **CERN**
 - Funds the program
 - Deals with the logistics: rooms, visits, social activities
 - **France**
 - **CNRS/IN2P3**, with the help of **CEA/IRFU** and **Sciences à l'École**
 - **Selects the 24 high-school students**
 - **CERN + IN2P3**
 - **Jointly work on the 2-week agenda of the program:**
<https://indico.cern.ch/event/633683/timetable>
- **Organizing committee**
- **CERN: Malika Meddahi & Jean-Jacques Gras (HSSIP-France)**
Ines Knaepper & Stavroula Kosi (HSSIP)
 - **IN2P3: NA**

High-school students selection

- To be done before the end of the 2016-2017 schoolyear
 - Quick, efficient and fair
- Time selected for the program: Fall ('Toussaint') school holidays
 - Currently two weeks long
 - Only holiday period (with Christmas + New Year) common to all students
- What we did not want to do
 - To only select brilliant students coming from a few well-known high-schools
 - To base our selection on the result of national contests – e.g. Olympiads
- Our goals
 - To select good students
 - To shape a group of students who could work and live together for two weeks
 - To reflect the diversity of the society
 - ◆ Male/Female parity
 - ◆ Geographical coverage: not only mainland France
 - ◆ Cities vs. rural areas
 - ◆ City centers vs. suburbs
- Set of internal rules: at most one student per high-school, etc.

High-school students selection

- A quandary
 - Spread the word as widely as possible about the coming contest
 - Do not get overwhelmed by the number of applications
- Call summarized in two words: **open** and **competitive**
- Distribution
 - IN2P3 **teacher mailing lists**
 - ◆ French Teacher Programmes – 10 since 2008; 11th next Fall
 - ◆ « Passeport pour les deux infinis »
 - ◆ Educational cosmic ray detector projects
 - Via the **French National Education inspectors**
 - We could have done better for local (around CERN) French-speaking schools
- A quite long application form
- Only motivated students would complete it
 - **Based on CERN's Indico framework**
 - ◆ Straightforward to use!

Application form

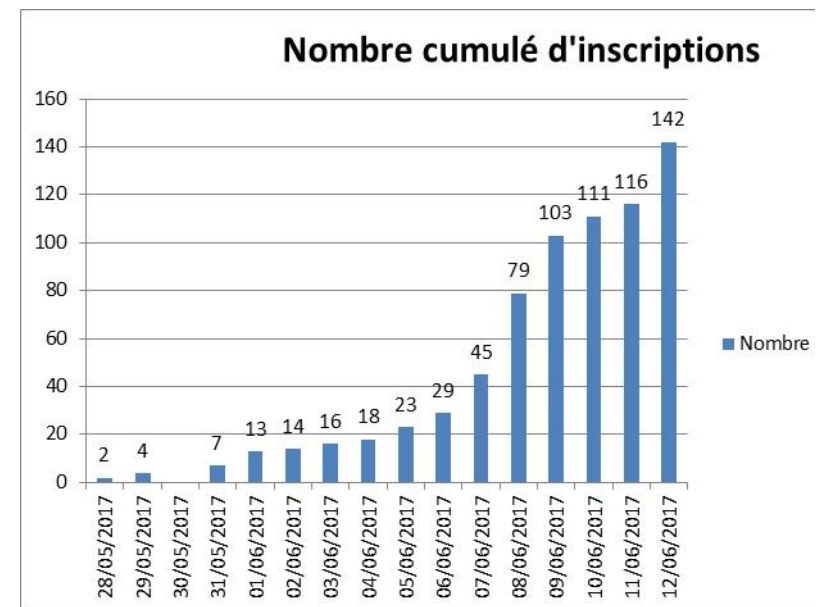
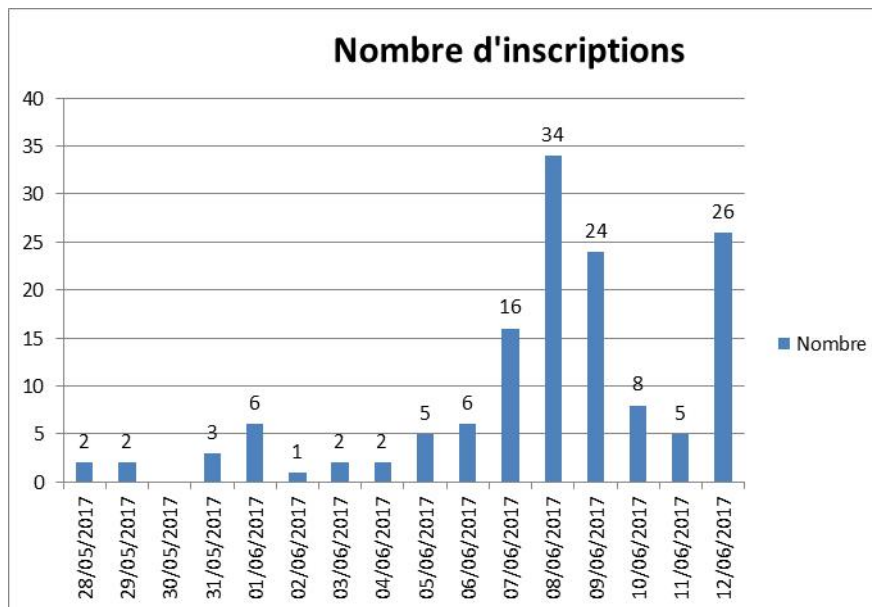
- CERN requirement: students should be at least 16 the day the internship starts
- Authorization letter from the parents
 - Not formal at the selection stage – we wanted parents to be aware of the application
 - Official document needed at a later stage for minors to exit France alone
- Reference letter from a teacher
 - Supporting the application
 - Means that student is discussing with the teaching staff
- School marks requested
 - Physics + another scientific subject
 - English + another non-scientific subject

→ All good as expected + hard to compare between high-schools

 - ◆ Limited weight during the selection process – but compulsory for the application
- Two short cover letters required
 - Why do you want to be part of this programme?
 - What do you know about CERN and what does it represent for you?
- Self-introduction in a one-minute video
 - Next time: have the video uploaded with the application instead of a simple link

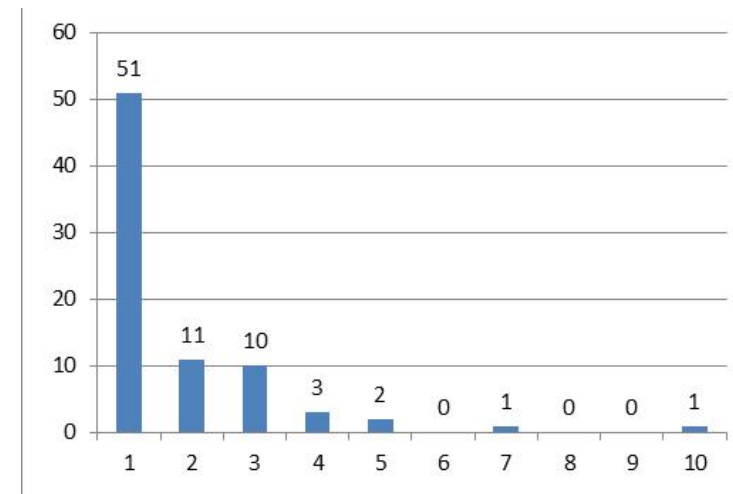
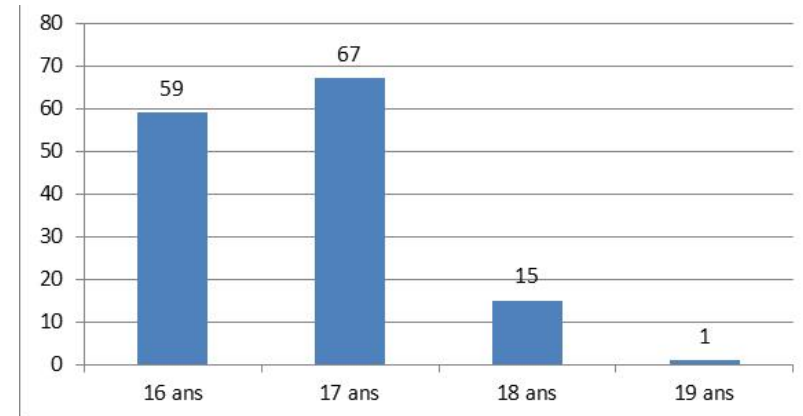
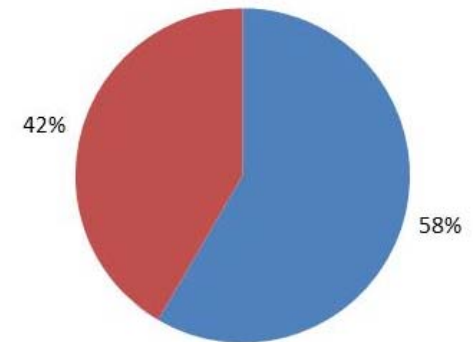
Applications

- **141 valid applications received** – factor 6 reduction needed
 - **Peak in the last few days before the end of the call**
 - ◆ Extended by three days to include a weekend
 - Useful: see histograms below
 - Last application uploaded at 23:59 the last night – deadline set at midnight
 - Submission website kept open one day more
 - No late application received, nor request by e-mail



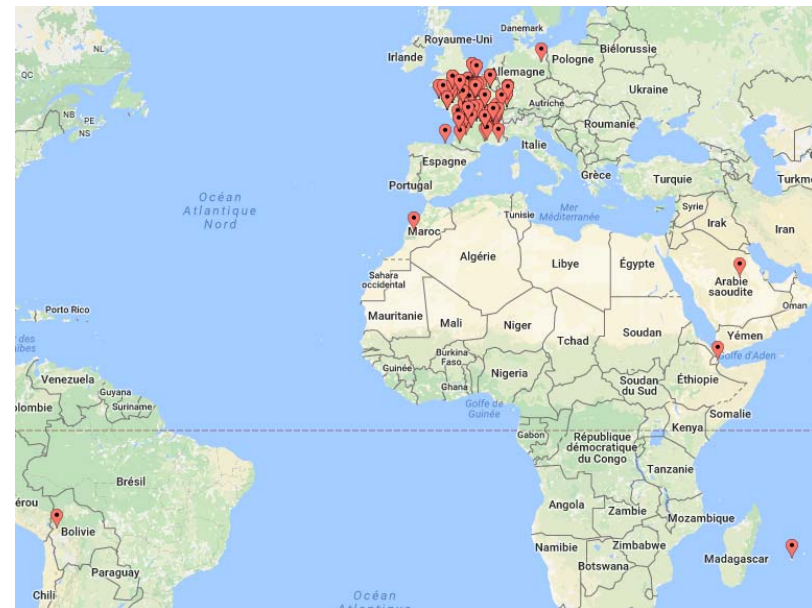
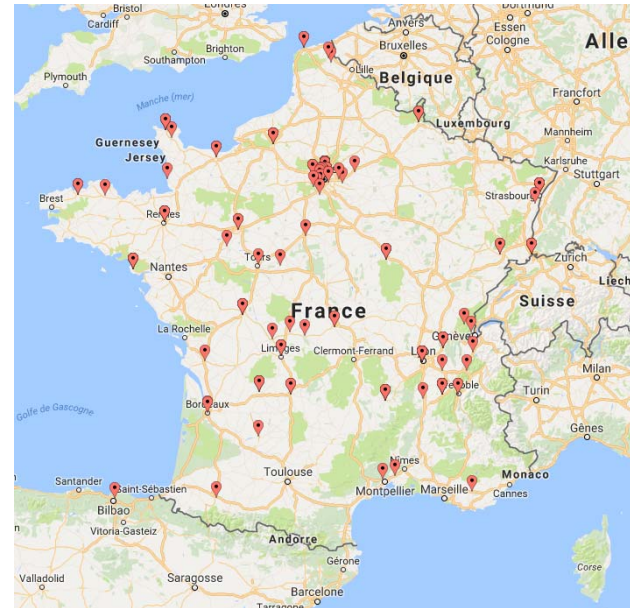
Applications

- 83 male, 59 female
 - Judging from the first names
 - **Forgot to include question about gender in the application!**
- Most applications from 16-17 year-old students
 - Core target for the program
 - Oldest student from Southern hemisphere!
- Number of applications per high-school
 - 10 candidates from « Lycée Polyvalent Maurice Utrillo » in Stains
 - ♦ North suburb of Paris, not a particularly well-known high-school
 - 7 from « Cité scolaire internationale » in Lyon



Applications

- **Geographical origin**
 - the France map looks a bit empty as markers show high-schools, not candidates
- **A handful of applications from outside mainland France**
 - From French high-schools
 - Applicants aware they could have to fund their trip from home to mainland France
- **Large variation of the number of applications per regional education authority**
 - From 0 to 15
 - ◆ Although of similar size!?
 - Unclear why
 - ◆ Maybe different local visibilities for the call?



Selection

- Gather applications by regions
 - Mitigate fluctuations seen at the level of the regional education authorities
 - Each region should have a number of selected candidates roughly proportionnal to the number of applications
- Make four batches of roughly equal size
 - Have at least two people review the applications of a given batch
 - CERN, CNRS, CEA, high-school teachers
 - Rank the applications in three categories
 - ◆ Applications selected at the first round
 - ◆ Applications to be discussed more broadly / to be put on the waiting list
 - ◆ Waiting list was not used
 - ◆ Applications not selected
- Smooth selection procedure
 - Excellent applications overall
 - Hard to select only 24 candidates
 - ◆ Follow-up activities organized mainly for those not selected – see later

Selection results

- In the end: 14 female and 10 male students were selected
 - Reflects that fact that applications from female students were on average better
- Three from outside mainland France
 - La Réunion Island, Germany and Djibouti
 - CERN finally able to fund their whole journey, from home and back
- We also selected high-school teachers to supervise the students during the internship
 - A male teacher available for the two weeks
 - ◆ Out of a handful of candidates
 - Two female teachers, one for each week
 - ◆ Only two candidates!

Internship program

- **Morning: alternating lectures – O(1h) – and visits**
 - **Lectures:** particle physics, Standard Model, Higgs boson, neutrinos, heavy ions, antimatter, introduction to cosmology, accelerator complex, beam instrumentation, the grid, computing science
 - **Visits:** SC, CCC, SM18, AD & LEIR, ATLAS visitor center, ALICE, AMS, CC Neutrino platform, S’Cool LAB
- Quite dense program but well-received by students
- **Afternoon: shadowing and work in a CERN group in pairs**
 - In the same group for 8 afternoons
 - A wide set of activities



- (Semi-) random distribution of pairs
 - ◆ **Students were not asked for their preferences**
 - Discovery of new activities
- **Poster session** on Thursday afternoon the second week
- **Short oral presentation** the last morning of the internship

Internship program

- One week overlap with the HSSIP-Norway program
 - We tried to contact organizers; never got an answer
→ Spontaneous exchanges among students
- Joint session with the teachers of the French Teacher Programme + HSSIP-Norway
 - Screening of 'Particle Fever' + discussion with scientists
- Conference about gravitational-waves
- Short meeting (30 minutes) with **Fabiola Gianotti**
 - Q&A session prepared the day before

HSSIP-related activities in France

- 141 applications
 - 24 happy students / 117 highly disappointed
 - High quality overall
- Organization of activities primarily targetting candidates who did not get selected
- A handful of lab visits
 - Took place during the Fall holidays: parallel to the internship
 - Paris area and in the provinces thanks to the IN2P3 network of labs
 - More likely for students to find a visite nearby – no support for transportation
- ATLAS and CMS virtual visits
 - Many individual connections instead of a whole class connected from a single place
 - Live feed broadcasted; use of an [online pad](#) to interact and ask questions
- All the candidates who accepted to provide their home address received a copy of the « Passeport pour les deux infinis » book

Outlook

- **HSSIP-France 2017 was a success**
 - Students and teachers spent two wonderful weeks at CERN
 - Fun (and time-consuming) to setup a new project
- **Happy to take questions now or by e-mail**
 - **Meet Malika and Jean-Jacques at CERN!**



- **Looking forward to HSSIP-France 202X!**