

# Été Rémi

16/11/1990

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Driving licence A and B

## Computing for High Energy Physics

## PhD in High Energy Physics

### Technical skills

- ✓ Analysis and synthesis on a research topic
- ✓ Prototyping new scientific technologies
- ✓ Ability in giving talks during international conferences
- ✓ Ability in reporting weekly progress
- ✓ Ability in communicating with pedagogy

### Computing skills

- ✓ Development: C/C++ 11/14/17, Python
- ✓ Versioning: Git, SVN
- ✓ Script: XML, JSON, CMake, Shell UNIX
- ✓ Web: Javascript, HTML, CSS, Node.js
- ✓ Design: Design patterns, framework refactoring
- ✓ Software and libraries: Qt, OpenMP, Geant4, ROOT, iLCSoft
- ✓ Technologies: TravisCI, Docker, CVMFS

### Experiences and projects

Since July 2017  
Fellowship

**DESY** – Deutsch Elektronen Synchrotron  
Fellowship program – FLC group

- ILD software reconstruction convener
- iLCSoft stack development and administration
  - Development of an automated energy calibration method (LCCalibration)
  - Development of core packages (Marlin, LCIO)
  - Software stack admin
  - Software deployment
  - Data quality insurance
  - Software support: software issues, tutorial sessions
- Development of multi-threaded version of the Marlin framework
  - Development of a thread-safe IO library (SIO)
  - Development of a thread-safe logging library (streamlog)
  - Design and implementation of the multi-threading version of Marlin
  - Porting of the ILD reconstruction chain to the multi-threaded framework

C/C++ 11/14/17,  
Python, ROOT, Shell,  
XML, Json, CMake,  
Qt, LaTeX, Beamer,  
Doxygen, Git,  
Docker, TravisCI

2013 – 2017  
PhD

**IPNL** – Institut de Physique Nucléaire de Lyon  
Online data quality monitoring framework development for the high energy physics domain (DQM4HEP)

- Software architecture development
- Software development : network interface, graphical user interfaces (GUI), analysis user interfaces, DAQ interface, remote process management
- Software validation using real test beam data at CERN (SPS)
- Deployment over multiple servers
- Presented at international conferences :
  - CALICE meeting (Japon, France) ~ 70 pers
  - IEEE Poster session (France)

C/C++, ROOT, Bash,  
XML, JSON, CMake,  
pthread, DIM, Qt,  
LaTeX, Beamer,  
Doxygen, Git, Yaml,  
Travis CI

2013 – 2017  
PhD

**IPNL** – Institut de Physique Nucléaire de Lyon  
Particle flow algorithm development (ArborPFA) in the ILD detector for the ILC project

- Oriented-tree graph pattern recognition algorithms development in the HEP context
- Applied in a study meant to separate nearby hadronic showers in the SDHCAL prototype
- Physics performances study for the ILC project using the ILD detector
- Presented at international conferences :
  - CALICE Meeting (Japan, USA, Spain, France, Germany) ~ 70 pers
  - Linear Collider Workshop (Japan, Canada) ~ 200 pers

C/C++, XML, CMake,  
Bash, PandoraSDK,  
OpenMP, ROOT,  
Geant4  
LaTeX, Beamer, Git

2013  
6 months  
M2 internship

**IPNL** – Institut de Physique nucléaire de Lyon  
Separation of nearby hadronic shower in the SDHCAL prototype for the ILC project

- Oriented-tree graph pattern recognition algorithms development for the SDHCAL prototype
- Algorithm purity and efficiency study using single hadron showers

C/C++, XML, CMake,  
Bash, ROOT,  
LaTeX, Beamer, Git

2012 3 months M1 internship	<b>CERN</b> – Centre Européen pour le Recherche Nucléaire Geant4 simulation of GEM detector for the CMS group of the LHC experiment ➤ Numerical simulation implementation ➤ Data analysis of simulated samples	C/C++, SVN, CMake, Geant4, Doxygen, ROOT
2011 1 month L3 internship	<b>CERN</b> – Centre Européen pour le Recherche Nucléaire Refactoring of the ILCDIRAC user interface for the LDC group at CERN ➤ Application workflow analysis ➤ User interface refactoring and implementation	Python, Bash, XML, Git, SVN, Doxygen
2011 1 month L3 internship	<b>CPPM</b> – Centre de Physique des Particules de Marseille Set of cut optimisation on B meson selection for the $B_s \rightarrow \mu^+\mu^-$ channel of the LHCb experiment at LHC ➤ LHCb data analysis	C/C++, ROOT, LaTeX

## Education

2013 - 2017 PhD thesis	<b>Université Claude Bernard Lyon 1</b> Particle flow algorithm development (ArborPFA) in the ILD detector for the ILC project. Online data quality monitoring framework development.	C/C++, ROOT, Python, Git, SVN, CMake, XML, Json, CMake, Shell UNIX, Apache, DIM, Qt, Geant4, Doxygen
2011 - 2013 Master	<b>Université Claude Bernard Lyon 1</b> Subatomic physics and astrophysics	C/C++, Image processing, Statistical physics, Particle physics
2008 – 2011 Licence	<b>Université Aix Marseille II</b> Physics licence	C language, Numeric method for physics, Advanced mathematics

## Complementary education

2018	CERN computing school – Tel-Aviv (Israel)	Processor arch, multi- threading, general software development
2014 PhD school	SOS : School Of Statistics – Autrans (France)	Multivariate analysis, neural network, Boosted decision tree
2014 PhD school	Subatomic physics school – Lyon (France)	Geant4, high energy physics
2013 PhD school	Architectures , tools and methodologies for developping efficient large scale scientific computing applications – Bertinoro (Italia)	C++ 11, OpenMP, GPU programming, Profiling tools
2012 Master school	CERN Summer school – Geneva (Switzerland)	Numerical simulation, Geant4, data analysis

## Scientific notes, proceedings and papers

DQM4HEP : A generic data quality monitoring for high energy physics

- EPJ Web of Conferences 214, 05036 (2019)
- V01-04-04, 10.5281/zenodo.1012575 (2017)
- AIDA-2020-MS67, <http://cds.cern.ch/record/2291805> (2017)

Separation of nearby hadronic showers in the CALICE SDHCAL prototype detector using ArborPFA

- CALICE-CAN-2015-001 (2015)

Construction and commissioning of a technological prototype of a high-granularity semi-digital hadronic calorimeter

- JINST. 10. 10.1088/1748-0221/10/10/P10039 (2015)

Tracking within Hadronic Showers in the SDHCAL prototype using Hough Transform Technique

- JINST, 10.1088/1748-0221/12/05/p05009 (2017)