Maël **Le Garrec**

CS Engineer · Accelerator Physics PhD Student

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Experience

KEK *Tsukuba, JP*

Visiting Scientist *2024*

- Measurement of linear optics of SuperKEKB
- First observations of higher chromaticity non-linear orders
- First observations of sextupolar Resonance Driving Terms

CERN *Geneva, CH*

PhD Student - Accelerators and Beam Physics *2021 — 2024*

- Measurements and corrections during LHC's commissioning
  - Linear optics: β-beating, dispersion, energy, coupling
  - Non-linear optics via chromaticity: Q'' and Q'''
- Measurement, modelling and correction of decapole fields via Chromatic Amplitude Detuning, Q''' and RDTs.
- Observation and modelling of higher order fields (dodecapole and decatetrapole).
- Measurement and correction of skew octupole fields via RDTs.
- Analytical calculations from Hamiltonians.

Geneva, CH

Trainee - Accelerators and Beam Physics *2019 — 2021*

- Software development for Optics Measurements and Corrections for LHC Run III commissioning.
- Particle tracking simulations ; dev in Python and Java.

Scaleway *Paris, FR*

DevOps *2018 — 2019*

- Maintenance of Python APIs, server images and system software.
- Administration of thousand of hypervisors and servers.

Education

Gothe Universtät Frankfurt *Frankfurt am Main, DE*

Doctoral Candidate *2021 - 2024*

- Thesis: LHC Effective Model for Optics Corrections
- Under the supervision of Apl. Prof. Dr. Giuliano Franchetti and Dr. Ewen H. Maclean

EPITA *Paris, FR*

Computer Science Engineering *2013 - 2019*

- Focus on systems and network security
- Low-level development and system administration

CERN Accelerator School *Chavanne de Bogis, CH / Sévrier, FR*

Accelerator Physics Courses - https://cas.web.cern.ch *2021-2022*

- Introduction to Accelerator Physics, 2 weeks focused on basic accelerator physics subjects.
- Advanced Accelerator Physics, continuation of previous school, focused on advanced subjects.

Skills and Interests

Coding	Python, C/C++, Java, bash, LaTeX, Rust
Web	Flask, HTML, CSS, Apache
Others	Archlinux, Debian, Git, pgSQL, Scipy, Sympy, Numpy, Pandas, Matplotlib
Languages	French, English (C1), German (A2)
Interests	Electronics, CAD Design & 3D Printing, Automotive Mechanics, Climbing, Paragliding

Professional Knowledge

Particle Tracking and Analysis

MAD-X, MAD-NG, OMC3, XSuite *2019-*

- LHC single particle tracking with field errors.
- Frequency and Optics analysis for beta-beating, dispersion, RDTs, etc.
- Correction of Optics based on response matrices (Chromaticity, RDTs)
- Modelling of machine errors.
- Dynamic Aperture simulations with XSuite.

Contests FRANCE

2017 37th/700, *Meilleur Développeur de France* (Best French Developer), algorithms contest *Paris*