

# Eldwan Brianne

## Curriculum vitae

DESY, Notkestr. 85

22607 Hamburg, Germany

☎ +49 (152) 52 869833

☎ +49 (040) 8998 5348

✉ [eldwan.brianne@desy.de](mailto:eldwan.brianne@desy.de)

🌐 <http://desy.de/~ebrianne>

*Github:* <https://github.com/ebrianne>

French (Native), German (Advanced)

Russian (Basic), English (Fluent)

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## Education.

### Academic Qualifications.

- 2013 – 2018 **Ph.D. in Physics**, *University of Hamburg*, Hamburg, Germany.  
Under the supervision of Dr. Katja Krüger and Prof. Dr. Erika Garutti.  
Thesis: Time development of hadronic showers in a Highly Granular Analog Hadron Calorimeter
- 2011 – 2013 **Master & Magistère**, *University Paris-Sud XI & Tomsk Polytechnic University*, Tomsk, Russia, *Fundamental Physics, Ecology & Management, Mention Bien - Second Class Honors*.  
Supervisors: Prof. Dr. Pierre Desesquelles & Prof. Dr. Leonid Petrovich Rikhvanov.  
Thesis: The plutonium in France and Russia
- 2010 – 2011 **Bachelor & Magistère**, *University Paris-Sud XI*, Orsay, France, *Fundamental Physics, Mention Bien - Second Class Honors*.
- 2008 – 2010 **Preparatory School**, *Lycée François Rabelais*, Saint-Brieuc, France, *Preparatory class in Mathematics, Physics and Chemistry*.  
Accepted in concours Petite Mines, CCP

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## Professional experience.

- Jul 2018 – Present **DESY Fellow (Post Doctoral Researcher)**, *Deutsches Elektronen-Synchrotron (DESY)*, Hamburg, DE.  
Involved in the DUNE Near detector concept, I am in charge of:  
– Design and optimization of a highly granular electromagnetic calorimeter for the DUNE Near detector  
– Study the performance of such detector  
– Maintain and improve the Near detector software framework (GARSoft)  
– Promote the DUNE experiment in Germany
- Nov 2013 – Jul 2018 **Graduate Scientific Assistant**, *Deutsches Elektronen-Synchrotron (DESY)*, Hamburg, DE.  
Involved in the International Linear Collider effort in the FLC group, I was in charge of:  
– Conception of a high granular Analogue Hadronic Calorimeter as part of the CALICE Collaboration.  
– Improvement of the commissioning procedure of the electronics.  
– Testbeam support at DESY and CERN  
– Maintaining the CALICE software framework  
– Analysis: Timing calibration of the AHCAL technological prototype, study of the time development of hadronic showers and the application of timing to improve detector physics performance.
- Feb – Jul 2013 **Master Student**, *Tomsk Polytechnic University*, Tomsk, RU.  
Master student working in the university laboratory, I performed:  
– Chemical extraction of plutonium in soils  
– Radiation measurement with a spectrometer

- May – Sep 2012 **Summer Student**, *Deutsches Elektronen-Synchrotron (DESY)*, Hamburg, DE.  
 Test and characterization of the front-end electronics of a high granular calorimeter (SPIROC2B).  
 Participated in testbeam at CERN in November 2012.  
 Report: Studies of the front-end electronics of the Analog HCAL
- Jun – Jul 2011 **Bachelor final year project**, *Laboratoire de l'Accélérateur Linéaire (LAL)*, Orsay, FR.  
 Characterization of the front-end electronics (SPIROC2B) of an electromagnetic calorimeter. Analysis of the response of the chip. Working with a team and in collaboration with DESY.  
 Report: Caractérisation de l'électronique frontale d'un calorimètre a haute granularité

## Teaching experience .

- Feb - Mar 2020 **Tutor for the EDIT school**, *DESY*, Hamburg, Germany.  
 Tutor for the calorimeter group involving hardware calibration, testbeam and data analysis and analysis with PandoraPFA
- Oct 2019 **Tutor for the finalists of Beamline for school**, *DESY*, Hamburg, Germany.  
 Taking care of high school students in data analysis of testbeam data using python programming and Jupiter notebook
- Jul - Aug 2016 **Tutor for a summer student**, *DESY*, Hamburg, Germany.  
 Supervising a summer student in hardware commissioning and data analysis for the CALICE AHCAL

## Awards and Grants .

- Mar 2020 – Present **Fermilab Intensity Frontier Fellow**, *FNAL*, Chicago, USA.  
 Received an award of \$25,000 to stay at Fermilab for 1 year. Research project:  
[https://www.fnal.gov/pub/forphysicists/fellowships/intensity\\_frontier/past\\_and\\_current/Brianne\\_Project.pdf](https://www.fnal.gov/pub/forphysicists/fellowships/intensity_frontier/past_and_current/Brianne_Project.pdf)

## Scientific communication.

### Conferences.

- 28 - 30 Sept 2020 **CALICE Collaboration Meeting Everywhere**, *IJCLab*, Orsay, France.  
 Remote conference
- 21 - 25 Sept 2020 **DUNE Collaboration Meeting Virtual**, *Fermilab*, USA.  
 Talk: ND-GAr Overview
- 28 April 2020 **Quantum Universe Day**, *DESY*, Hamburg, Germany.  
 Talk: A high granular calorimeter for a neutrino experiment
- 23 - 27 Sept 2019 **DUNE Collaboration Meeting**, *Fermilab*, USA.  
 Talk: ECAL Update
- 20 - 24 May 2019 **DUNE Collaboration Meeting**, *Fermilab*, USA.  
 Talk: ECAL Status
- 10 - 12 Apr 2019 **CALICE Collaboration Meeting**, *University of Utrecht*, Utrecht, Netherland.  
 Talk: Simulation Studies for a Highly Granular Calorimeter in DUNE
- 24 - 28 Sept 2018 **DUNE Collaboration Meeting**, *Fermilab*, USA.  
 Talk: ECAL results (remote)
- 25 - 27 Sep 2017 **CALICE Collaboration Meeting**, *University of Tokyo*, Tokyo, Japan.  
 Talk: Timing analysis of 2015 AHCAL data (steel absorber)
- 29 Oct - 06 Nov 2016 **IEEE & NSS Symposium Conference**, *Conference Center*, Strasbourg, France.  
 Talk: High Precision Timing Measurement in the CALICE Analogue Hadronic Calorimeter

- 29 Feb - 4 Mar 2016 **DPG Meeting**, *University of Hamburg*, Hamburg, Germany.  
Talk: Timing measurement in the CALICE AHCAL
- 09 - 13 Mar 2015 **DPG Meeting**, *University of Wuppertal*, Wuppertal, Germany.  
Talk on behalf of the collaboration: Status of the CALICE AHCAL Engineering prototype
- 24 - 28 Mar 2014 **DPG Meeting**, *University of Mainz*, Mainz, Germany.  
Talk: Particle Flow Parametrization for Fast Simulation of ILC Detectors
- Workshops.**
- 27 - 29 Feb 2020 **DUNE Near Detector Workshop**, *TIFR*, Mumbai, India.  
Talk: ECAL for the MPD
- 20 - 23 Oct 2019 **6th DUNE Near Detector Workshop**, *DESY*, Hamburg, Germany.  
Local Organiser and 4 talks
- 18 - 19 Mar 2019 **DUNE Multi-Purpose Detector Workshop**, *Laboratori Nazionali di Frascati*, Frascati, Italy.  
Talk: CALICE-style ECAL
- 20 - 24 Apr 2015 **Asian Linear Collider Workshop**, *University of Tokyo & KEK*, Tokyo, Japan.  
Talk: First look into AHCAL test beam data
- 14 - 16 Jan 2014 **2nd Fast Monte Carlo Workshop in HEP**, *DESY*, Zeuthen, Germany.  
Active discussions on full/fast simulations and generators
- Annual meetings.**
- 12 - 13 Dec 2018 **AHCAL Annual Meeting**, *DESY*, Hamburg, Germany.  
Talk: Simulation studies for a DUNE Near Detector
- 13 - 14 Dec 2017 **AHCAL Annual Meeting**, *DESY*, Hamburg, Germany.  
Lively discussions on electronics, DAQ and AHCAL analysis
- 15 - 16 Dec 2016 **AHCAL Annual Meeting**, *DESY*, Hamburg, Germany.  
Talk: Time calibration July 2015 data
- 10 - 11 Dec 2015 **AHCAL Annual Meeting**, *DESY*, Hamburg, Germany.  
Talk: First look into 2015 data
- 16 - 17 Dec 2014 **CALICE AHCAL annual meeting combined with electronics and DAQ**, *DESY*, Hamburg, Germany.  
Talk: Online Monitoring

## **Schools.**

- 15 - 26 Aug 2016 **SLAC Summer School**, *Palo Alto, CA, USA*.  
Main topics: QCD, EW, Higgs, New physics, Flavor physics, Jets, DAQ, Calorimeters, Energy frontier  
Mini-project: Simulation of pixel telescope and parameters optimization
- 2 - 15 Sep 2015 **CERN HEP Summer School**, *Bansko, Bulgaria*.  
Main topics: Cosmology, Flavor physics, EW theory, QCD, Neutrinos, Higgs, Heavy-Ion, Statistics, BSM, Outreach  
Poster: The CALICE Technological Prototype of the Analog Hadronic Calorimeter for ILC
- 31 Mar - 04 Apr 2014 **Statistics School**, *Hamburg, Germany*.  
Main topics: Statistics methods for particle physics analysis
- 11 - 18 Feb 2014 **ITEP Winter School of physics**, *Moscow, Russia*.  
Main topics: Theory, Flavor physics, Quarkonium, Higgs, Neutrinos, B-physics, Cosmology

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## Skills and Personal Interests.

### Programming language.

C/C++, bash, python

### HEP Software.

ROOT, ILCSOFT, Geant4, DD4hep, Mokka, art, GArSoft, PandoraPFA

### Misc.

awk, cmake, git, subversion, Qt, MySQL, LabVIEW,  $\text{\LaTeX}$

### Personal Interests.

Bouldering, Music, Travel, Cooking, IT/Programming, New technologies, Movies

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## Voluntary.

Winter 2007 **Activity organizer**, *Miniac-Morvan*, France.

Organizer of activities for children during a ski camp in Jausiers (Alps)

Summer 2006/2007 **Activity organizer**, *Miniac-Morvan*, France.

Responsible with a team of people to organize activities through the summer for children aged between 5-6 up to 16 years old.

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## Relevant Publications.

### Proceedings

- [1] E. Brianne. High precision timing measurement in the calice analogue hadronic calorimeter. In *2016 IEEE Nuclear Science Symposium, Medical Imaging Conference and Room-Temperature Semiconductor Detector Workshop (NSS/MIC/RTSD)*, pages 1–6, Oct 2016.

### Articles

- [2] Babak Abi et al. Deep Underground Neutrino Experiment (DUNE), Far Detector Technical Design Report, Volume I Introduction to DUNE. *JINST*, 15(08):T08008, 2020.
- [3] The CALICE Collaboration. Timing of hadron showers in the CALICE Analog Hadronic Calorimeter prototype using steel absorber. *CALICE Analysis Note 061*, In review, 2018.
- [4] The DUNE Collaboration. The DUNE Near Detector Conceptual Design Report. In progress, 2019.

### Thesis

- [5] Eldwan Brianne, Katja Krüger, and Erika Garutti. Time development of hadronic showers in a Highly Granular Analog Hadron Calorimeter, 2018.