# Msc. David Simonne
## PhD student

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## 📰 PUBLICATIONS

**bcdi, tools for pre(post)-processing Bragg and forward coherent X-ray diffraction imaging data,** *Zenodo* ⧉

2022

Carnis J., Atlan, C., Simonne, D.;, Leake S., Dzhigaev D., Kishore K., Dupraz M., DeepSource Bot, Singaravelan K., and Richard M.I.
Contribution: code development.

**Atomic Order along the Half-to Full-Heusler Transition in Ni1+xMnSb,** *Physica Status Solidi B: Basic Solid State Physics* ⧉

2021

Neibecker, P.; Xu, X.; Simonne, D.; Hollender, L.; Porcher, F.; Senyshyn, A.; Omori, T.; Kainuma, R.; Petry, W.; and Leitner, M.
Contribution: data reduction and analysis.

**Effect of manganese promotion on the activity and selectivity of cobalt catalysts for CO preferential oxidation,** *Applied Catalysis B: Environmental* ⧉

2021

Zhong, L; Barreau, M.; Chen, D.; Caps, V.; Haevecker, M.; Teschner, D.; Simonne, D.; Borfecchia, E.; Baaziz, W.; Šmíd, B.; Zafeirato, S.
Contribution: data reduction and analysis.

**THORONDOR: a software for quick treatment and analysis for low energy XAS data,** *Journal of Synchrotron Radiation - Computer Programs* ⧉

2020

D. H. Simonne, A. Martini, M. Signorile, A. Piovano, L. Braglia, P. Torelli, E. Borfecchia and G. Ricchiardi.
Contribution: code development and writing.

## 🪪 PROFILE

PhD candidate in Physics, focused on the study of heterogeneous catalysts with synchrotron techniques. Specialized in probing material surfaces and bulk utilizing X-rays methods. Familiar with 3D image processing with Python. Author of Python packages and data analysis pipelines used for data reduction and analysis at Large Scale Facilities.

## 🧠 SKILLS

**International collaboration** ● ● ● ● ●
*Initiated and participates in several international projects.*

**Python** ● ● ● ● ●
*Data reduction, analysis, program development.*

**GIT** ● ● ● ● ○
*Familiar with version control and team-collaboration.*

**Scientific writing** ● ● ● ● ○
*LaTeX, Office suite*

**Scientific presentation** ● ● ● ● ○

## 🗂 PROJECTS

**EAGLES** ⧉
Interactive data analysis softwares in Jupyter Notebook, international collaboration, optimized for computing clusters (JupyterHub) at Large Scale Facilities.

**Time Resolved Polarised Grazing Incidence Neutron Scattering from Composite materials,** *Polymers*

2019

Wolff, M.; Saini, A.; Simonne, D.; Adlmann, F.; Nelson, A.
Contribution: data reduction and analysis.

## 💼 PROFESSIONAL EXPERIENCE

### PhD student,
*SOLEIL - CEA Grenoble, Dr. A. Coati, Dr. A. Resta, Dr. M-I Richard*

11/2020 – present | Gif sur Yvetter, France

- **Image nanostructures** to probe *in situ* and *operando* conditions.
- Understand the structural phenomena and link them to their **activity**, **selectivity**, **reusability** and **sustainability**.

Scientific project on Pt nanocatalysts used for the Ammonia oxidation, studied *via* Bragg Coherent Diffraction Imaging (BCDI) and Surface X-ray Diffraction (SXRD).

- *Gwaihir* ⧉ , program for the analysis of BCDI data.
- Co-tutor at the 2022 ESRF User Meeting (BCDI - ID01).
- Oral presentation at the 2022 SOLEIL User Meeting.
- Poster presentation at the AFC conference 2021.

### Research assistant, *University of Torino, Dr. Elisa Borfecchia*

01/2020 – 11/2020 | Torino, Italy

*MOSCATo* project: Cutting-edge X-ray methods and models for the understanding of surface site reactivity in heterogeneous catalysts and sensors.

- **Study of heterogeneous catalysis** with X-Ray Absorption Spectroscopy.
- *Thorondor* ⧉ , program for the analysis of soft X-Ray Absorption Spectroscopy data.

### Intern, *Technical university of Munich, Dr. Michael Leitner*

04/2019 – 10/2019 | Munich, Germany

**Master thesis:** "Atomic ordering in Heusler alloys and neutron diffraction".
Analysis and refinement of models on neutron diffraction data sets by the means of process modelling and least squares regression.
All programs were written in Python.

### Intern, *Uppsala universitet, Dr. Maximilian Wolff* ⧉

05/2018 – 06/2018 | Uppsala, Sweden

- Analysis of Small-Angle Neutron Scattering (SANS) data on micellar systems.
- First approach to data analysis, large-scale facilities datasets and writing for publishing.

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## 🌐 LANGUAGES

**English** ● ● ● ● ●
*TOEFL (109/120, 2018)*

**French** ● ● ● ● ●
*Native*

**German** ● ● ● ● ○
*B2*

**Italian** ● ● ● ○ ○
*B1*

**Japanese** ● ● ○ ○ ○
*N4*

## 📕 COURSES

### HERCULES ⧉

2022

School on Neutrons, X-ray Synchrotron Radiation, and Free Electron Laser for condensed matter studies.

### X-ray interaction with matter

Familiar with Neutron and X-ray diffraction, X-ray absorption spectroscopy, X-ray photoelectron spectroscopy, Crystallography.

### Programming languages

Online classes on Python, Bash, Linux, MPI, HTML, CSS, website hosting (*openclassrooms.com*, MOOC).

**Intern,** *Tohoku University, Pr. Dr. Shinichiro Iwaï*

2016 – 2017 | Sendaï, Japan

Group research projects at the Ultrafast Spectroscopy Laboratory:
- Excitation Intensity Dependence of Ultrafast Carrier Dynamics in GaAs
- Primary Dynamics of Photo-Induced Phase Transition in V2O3

**Intern,** *FRM2, Dr. Jean François Moulin* ⧉

05/2016 – 06/2016 | Munich, Germany

- Design of a heating-cell used inside a diffractometer
- Optimization of the experimental process for solid-liquid interfaces experiments inside the neutron reflectometer REFSANS.

**Mailman,** *La Poste Française*

Avranches, France

Summer job as mailman, three years in a row.

## 🎓 EDUCATION

**PhD,** *Physique en Île de France (PIF), Université Paris-Saclay* ⧉

2020 – present | Saclay, France

- Training at Collège de France, HERCULES school, ENS Paris-Saclay.
- Teaching physics labs at Université Paris-Saclay.

**M.S. Physics,** *Technical university of Munich* ⧉

2017 – 2019 | Munich, Germany

- Joint degree with Université de Rennes 1 (Fr) / University of Turin (It).
- Crystallography, solid-state physics and chemistry, quantum physics, metals and alloys, spectrocopy, and numerical methods.

**COLABS,** *Tohoku university* ⧉

2016 – 2017 | Sendaï, Japan

Physics, materials science, and engineering courses. Japanese culture and language.

**Bachelor of Physics,** *Université de Rennes 1* ⧉

2014 – 2016 | Rennes, France

Electromagnetism, classical and quantum mechanics, thermodynamics, solid-state physics, optics, crystallography, nuclear physics, mathematics for physics.

## 🏅 AWARDS

**Scholarship,** *Fondation Université Rennes 1*

2017

Awarded for an internship in Uppsala, Sweden.

**Erasmus + scholarship,** *University of Rennes 1*

2016

Awarded by a selection committee for a specific collaboration between the University of Rennes 1 and Tohoku University.