

# Valentin Roussel | PhD student

Institut Français de l'Éducation – Lyon – France

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Member of the Association for Research in Mathematical Education (ARDM)

I am a PhD student at the S2HEP laboratory, in Lyon, and I work under the direction of Jana TRGALOVA. My work covers three areas of research : educational sciences, mathematics and computer science. My main research interests are in mathematical modeling, information and communication technologies for education (ICT,) teacher education, and critical thinking.

## Research interests

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- **Educational sciences**
  - The notion of model in mathematics : teacher education and epistemology of the notion.
  - Deconstructing the neuromyths
  - Critical thinking in mathematics class
- **Computer science and ICT**
  - Cellular automata
  - Algorithms
  - Good coding practices
- **Mathematics**
  - Experimental Mathematics
  - Bayesian statistics
  - Dynamic systems

## Education

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### Academic qualifications.....

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| ○ <b>University of Lyon</b>                                         | <b>Lyon, France</b> |
| ○ <i>Ph.D, Applied Mathematics and Mathematical Applications</i>    | <i>2019–2022</i>    |
| ○ <b>École Normale Supérieure de Lyon</b>                           | <b>Lyon, France</b> |
| ○ <i>Master, Didactics and epistemology of sciences</i>             | <i>2017–2019</i>    |
| ○ <b>University of Lyon</b>                                         | <b>Lyon, France</b> |
| ○ <i>Licence/Bachelor, Computer Science and Applied Mathematics</i> | <i>2015–2017</i>    |

### Related trainings.....

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|-------------------------------------------------------------------------------------|---------------------------|
| ○ <b>Institut Français de l'Éducation</b>                                           | <b>Lyon, France</b>       |
| ○ <i>Training, Helping and sustaining teachers in priority education</i>            | <i>2019 (3 days)</i>      |
| ○ <b>University Johann Wolfgang Goethe of Frankfurt</b>                             | <b>Frankfurt, Germany</b> |
| ○ <i>Academic exchange, MoMaTrE– Mobile math Trails in Europe Intensive program</i> | <i>2019 (2 weeks)</i>     |
| ○ <b>École Polytechnique</b>                                                        | <b>Paris, France</b>      |
| ○ <i>Short training, How to write and publish a scientific article</i>              | <i>2018 (1 week)</i>      |

- **Institut Français de l'Éducation** **Lyon, France**  
*Short training, Mathematical problems to search, experiment and manipulate* 2018 (2 days)
- **Institut Français de l'Éducation** **Lyon, France**  
*Short training, Personnalisation des apprentissages dans un environnement numérique* 2018 (4 days)
- **Scientific district of la Doua** **Lyon, France**  
*Certificates, Computer Certificates and Internet Level 1 and 2 (Teacher)* 2018 (2 x 3 months)
- **Faculty of Medicine Lyon-Est** **Lyon, France**  
*Certificate, Civic Prevention and Rescue, level 1* 2018 (2 jours)

## Professional experience

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### Research.....

- **Sciences, Société, Historicité, Éducation et Pratiques (S2HEP) laboratory** **Lyon**  
*Contractual Ph.D student* 2019–2022  
 Young researcher, my work focuses on teacher education, science mediation and education science.
- **Sciences, Société, Historicité, Éducation et Pratiques (S2HEP) laboratory** **Lyon**  
*Introductory internship* 2019 (6 months)  
 Internship in research groups, introduction to research methodologies, information monitoring, support for the production and production of the Master 2 thesis.
- **University Johann Wolfgang Goethe of Frankfurt** **Frankfort**  
*Intensive study program* 2019 (2 weeks)  
 Development of didactic engineering for the MathCityMap european project, cycle of conferences around the teaching and didactics of mathematics, supervision of "Mathematical Rallies".

### Education science et computer science.....

- **Institut national supérieur du professorat et de l'éducation** **Lyon**  
*Educational engineer, trainer* 2019-2020 (1 year)  
 Teacher trainer – update up to come
- **Institut Français de l'éducation – Department of digital mediation of knowledge** **Lyon**  
*Educational engineer, CDD* 2019 (4 months)  
 Integration in the European Horizon 2020 NEXT-LAB research project, development of ILS (Inquiry Learning Spaces), contribution to educational productions and publications, teacher training in the use of ILS.
- **Maison des Mathématiques et de l'Informatique** **Lyon**  
*Educational engineer* 2018 (3 months)  
 Teacher, facilitator - Organization and animation of mathematical extension workshops for primary classes, sensitization workshops for mathematics programs for parents.
- **Orange** **Lyon**  
*Web developer, CDD* 2017 (3 months)  
 Intranet and web application design for the Ericsson Support team

### Seasonal employment cumulated.....

- **S.A CTR-LG** **Bourg-en-bresse**  
*Maintenance and handling technician, CDDs* 2014–2016 (9 months)

## Computer skills

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- **Web** : PHP, CSS, HTML, relational algebra
- **Frameworks** : Bootstrap, LaTeX, Zotero, MySQL, R, Eclipse, Jupyter , Github
- **Programming languages** : Python, C, C++

## Languages

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- English : C1 (Fluency, autonomy) (6 months of experience abroad)
- Espagnol : A2 (Elementary)

## Resources and scientific activities

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In progress (research projects and academic resource projects).....

- **Roussel,V. (2022 ?), La modélisation en mathématique dans la formation des enseignants. Approche TICE, démarche d'investigation, contraintes institutionnelles et évolutions curriculaires internationales : quels besoins pour les enseignants ?** Thesis supervised by Jana TRGALOVA ; researches supported by the French Institute of Education in Lyon and the National Institute of Higher Education and Teaching.
- **Roussel,V. (2019), Esprit critique, mathématiques & éducation : ressources didactiques et pédagogiques pour une intégration de l'esprit critique en classe de mathématiques - une étude au troisième cycle.** Master thesis (M2) supervised by Jana TRGALOVA ; researches supported by the French Institute of Education in Lyon.
- **Roussel,V. (2018), TICE & logiciels de géométrie dynamique : pratiques et invariants didactiques des situations d'apprentissage.** Master thesis (M1) supervised by Jana TRGALOVA; regional survey supported by Christian MERCAT, director of IREM Lyon.

Publications.....

- Update up to come

Seminars.....

- **The didactical challenge of dynamic geometry environments** **Institut français de l'éducation**  
*Invited as young researcher (with a communication)* *Novembre 2019*  
Seminar organized by Luc TROUCHE around environments of dynamic geometry : resources, choice of teachers and knowledge at stake. During this seminar, I lead an intervention on the theme "Dynamic geometry, critical thinking and modeling: convergence of results and perspectives of thesis".
- **Creuset d'Analyse des recherches collaboratives** **Institut français de l'éducation**  
*External contributor* *2019-2020 (4 sessions)*  
The Collaborative Research Analysis Crucible (CRaC) is a seminar to better understand the processes at work in research conducted in collaboration with educational actors. I step in this seminar, proposing an external analysis on a corpus on the theme: "Passers, mediators, brokers: what roles, what actions to facilitate the contribution of each to the production of knowledge in collaborative research?".
- **Thinking and transforming spaces in the digital age** **Lycée la Martinière Duchère**  
*Invited as young researcher* *Octobre 2019*  
Seminar organized by the DANE of Lyon in partnership with ENS Lyon, Ifé, the Canopé network, the University of Cergy Pontoise and La Martinière Duchère.

- **Digital technology at the service of educational differentiation** **Institut français de l'éducation**  
*Trainer, lecturer* *Juin 2019*

How can trainers support teachers in using a digital platform to design personalized learning content and integrate it into their daily teaching? During this hackathon, I step in as a trainer and give a talk on "Differentiation: From a Knowledge-Based Education to a Student-Centered Education?". I propose in particular a historical and sociocultural analysis of the French educational currents.

- **Creuset d'Analyse des recherches collaboratives** **Institut français de l'éducation**  
*Observer* *2018-2019 (4 sessions)*

The Collaborative Research Analysis Crucible (CRaC) is a seminar to better understand the processes at work in research conducted in collaboration with educational actors.

## Conferences.....

- **Le climat change...alors ?** **Institut français de l'éducation**  
*Event organizer* *Juin 2019)*

In partnership with the Association for Science and Transmission of the Critical Mind (ASTEC), the French Institute of Education organized a conference-debate with Thomas DURAND, scientific mediator of the YouTube channel "La Tronche en Biais "and Scientific Director of ASTEC ; Marie DEGREMONT, expert political scientist ; Samuel MORIN, climate expert and contributor to the IPCC report ; and Lionel SCOTTO D'APOLLONIA, socio-epistemologist expert.

## Congresses.....

- **CFEM-ARDM national seminar** **Paris**  
*Invited as young researcher (with a communication)* *Novembre 2019*

Seminar on mathematics didactics of the ARDM and CFEM-ARDM symposium on november 21 and 22 in Paris. I proposed a communication around a poster on the theme "Critical thinking in mathematics class".

## Educational and digital resources.....

- **ROUSSEL, V (2019)** Introduction à l'inférence bayésienne - Cours 1 : Axiomatisation. Master. France. 2019. **hal-02315970** : a mathematical and epistemological exploration of the concept and main mechanisms at work in Bayesian thought. Keywords: Methods and statistics, epistemology, education.
- **ROUSSEL, V (2019)**, Introduction à l'inférence bayésienne - Cours 2 : le théorème de Bayes. Master. France. 2019. **hal-02315971** : a mathematical and epistemological exploration of the concept and main mechanisms at work in Bayesian thought. Keywords: Methods and statistics, epistemology, education.