

# Benjamin Ralph

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University of Bath

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## Current Position

**Lecturer (Teaching) – University of Bath**  
*January 2020–Present*

**Direction of Studies, Artificial Intelligence Online MSc**  
*March 2021–Present*

## Units Taught

*Where the unit is in bold, I was the primary unit teacher, otherwise I was supporting the unit delivery.*

### Computer Science Online MSc

*Foundations of Computation*  
2020: Jan-Feb, **May–Jun, Sep–Oct.**  
2021: **Jan–Feb**, May–Jun.

*Functional Programming*  
2020: **Mar–Apr, Jul–Aug, Nov–Dec.**  
2021: Mar–Apr, Jul–Aug

*Artificial Intelligence*  
2021: **May–Jun**

### Artificial Intelligence Online MSc

*Mathematics for Artificial Intelligence* - Unit written as well as taught  
2020: **Nov–Dec**  
2021: **Mar–Apr, Jul–Aug**

*Foundations of Artificial Intelligence*  
2021: **May–Jun**

*Applications of Artificial Intelligence*  
2021: **Jul–Aug**

*Natural Language Processing*  
2021: Jul–Aug

## Digital and Technology Solutions Specialist Degree Apprenticeship MSc

2020, 2021 - *Foundations of Computation*

2021 - *Functional Programming*

2021 - *Artificial Intelligence*

2020, 2021 - *Project Supervision*

## Computer Science BSc/MComp

2021 - *Artificial Intelligence (Year 2)*

2021 - *Project Second Marking*

## Computer Science MSc

2021 - *Artificial Intelligence*

## UKRI CDT in Accountable, Responsible and Transparent AI

2020 - *Statistics for Artificial Intelligence*

## Previous Positions

### Postdoctoral researcher at Inria Saclay - Île-de-France

*February 2019–December 2019*

- Working with team Parsifal led by Dale Miller, supervised by Lutz Straßburger.
- Supported by ANR project FISP ANR-15-CE25-0014-01 - the Fine Structure of Formal Proof Systems and their Computational Interpretations

### Graduate Teaching Assistant, University of Bath

*2014–2019*

#### Computer Science

*2017–2018 - Analytic Mathematics for Computation*

*2016–2018 - Functional Programming, Artificial Intelligence*

*2014–2018 - Discrete Mathematics for Computation*

*2014–2016 - Foundations of Computation II, Advanced Programming Principles*

*2016 - Guest Lecture: What is a proof?*

#### Mathematics

*2016–2017 - Programming and Discrete Mathematics*

*2014–2016 - Algebra I*

## Degrees

### PhD, Department of Computer Science, University of Bath

*2014–2019*

## **Modular Normalisation of Classical Proofs**

- Fully funded by EPSRC Doctoral Training Grant (fees and stipend).
- Supervised by Alessio Guglielmi
- Examined by Georg Moser and Willem Heijltjes.

[people.bath.ac.uk/bdr25/files/thesis-ralph-final.pdf](http://people.bath.ac.uk/bdr25/files/thesis-ralph-final.pdf)

**MMathPhil (Masters in Mathematics and Philosophy), University of Oxford**  
2010–2014

First Class in Honour Moderations, Parts A and B, and Part C

## **Research**

### **Publications**

#### **Herbrand proofs and expansion proofs as decomposed proofs**

*Journal of Logic and Computation*

#### **Towards a Combinatorial Proof Theory**

with Lutz Straßburger

*Tableaux 2019, London*

[people.bath.ac.uk/bdr25/files/CPT.pdf](http://people.bath.ac.uk/bdr25/files/CPT.pdf)

#### **A Natural Proof System for Herbrand's Theorem**

awarded the Rosser Prize for Best Student Paper

*LFCS 2018, Florida*

[people.bath.ac.uk/bdr25/files/prfsysht.pdf](http://people.bath.ac.uk/bdr25/files/prfsysht.pdf)

#### **Removing Cycles from Proofs**

with Andrea Aler Tubella and Alessio Guglielmi

*CSL 2017, Stockholm*

[people.bath.ac.uk/bdr25/files/RCP.pdf](http://people.bath.ac.uk/bdr25/files/RCP.pdf)

### **Selected Talks and Presentations**

#### **Towards a Combinatorial Proof Theory**

*LIPN Seminar, Université Paris 13, May 2019 & Micro-SD, University of Bath, June 2019*

#### **Decomposing First Order Proofs using Deep Inference**

*PCC 2016, Munich*

#### **Decomposing First Order Proofs**

*ALCOP 2016, Vienna*

#### **A Natural Cut Elimination Procedure for First Order Logic**

*ENPS 2015, Bath*

#### **Natural and Confluent Cut Elimination in Classical Logic**

*PCC 2015, Oslo*

## Grants

*Support from:*

**EPSRC Project EP/K018868/1**

*Efficient and Natural Proof Systems*

**ANR project FISP ANR-15-CE25-0014-01**

*The Fine Structure of Formal Proof Systems and their Computational Interpretations*

## Other

2019 - **Programme Committee** - Structures and Deduction

2017–2019 - **Peer Reviewer** - Tableaux, CSL, Logique et Analyse

2016–2017 - **Organiser** - Mathematical Foundations Seminar, University of Bath

2016 - **Volunteer** - LICS

2015 - **Attendee** - Midlands Graduate School in the Foundations of Computer Science