

Bertrand TEGUIA TABUGUIA | Mathematician and Computer Scientist, Ph.D.

Oxford, United Kingdom – 7 Parks Rd, Oxford OX1 3QG

☎ +44(0)7341321897 • 📞 +49 15212117745 (WhatsApp)
✉ bertrand.teguia@cs.ox.ac.uk ; bertrand.teguia@aims-cameroon.org
🌐 www.bertrandteguia.com • 🇨🇲 Cameroonian

Latest update: 2024
CV note: blue texts are clickable

OTHER PERSONAL DATA

First name, Last name: Bertrand, Teguiia Tabuguiia
Date of Birth: March 11, 1993
Family Status: Married, one child
Country and Place of Birth: Cameroon, Yaounde

EDUCATION

University of Kassel, Germany **Kassel**
Ph.D. in Mathematics, Computer Algebra *August 2018 – May 2020*
Power Series Representations of Hypergeometric Type and Non-Holonomic Functions in Computer Algebra, grade: distinction (Summa Cum Laude).
The thesis can be downloaded from the link <https://kobra.uni-kassel.de/handle/123456789/11598>.

AIMS-Cameroon **Limbe**
Master in Mathematical Sciences *August 2017 – July 2018*
Study pure and applied mathematics at AIMS (African Institute for Mathematical Sciences), Cameroon center.
Research essay in Computer Algebra: [Automatic Computation of Laurent-Puiseux Series of Hypergeometric Type](#), grade: distinction.
AIMS Taught Master, final grade: distinction

ENSP Yaounde-Cameroon **Yaounde**
Engineering in Mathematics and Computer Science *September 2011 – July 2016*
Ecole Nationale Supérieure Polytechnique (ENSP), Departments: Mathematics and Physical Sciences, and Computer Engineering.
Master Thesis: [Classification Non Supervisée et Suivi des Processus de Dynamique Forestière](#), grade: excellent (distinction).
Master in Computer Engineering, final grade: Good

Lycée de Mballa II **Yaounde**
Baccalauréat C *September 2004 – July 2011*
Secondary and High School.

EXPERIENCE AND POSITIONS

University of Oxford, England **Oxford**
Department of Computer Science, Postdoctoral Research Associate *November 2023 – present*

I work with [James Worrell](#) on algorithmic theory of linear and nonlinear dynamical systems.

MPI SWS, Germany

Saarbrücken

Decision problems, Postdoctoral Researcher

June 2023 – October 2023

Work mentored by [Joël Ouaknine](#) on problems related to holonomic sequences.

Max Planck Institute for Mathematics in the Sciences (MPI MiS)

Leipzig

Nonlinear Algebra, Postdoctoral Researcher

March 2022 – May 2023

Differential Algebra, Symbolic Computation, Algebraic Geometry, Mathematical Software. Work mentored by [Bernd Sturmfels](#).

University of Kassel, Germany

Kassel

Computer Algebra, Research Associate

June 2020 – February 2022

Working under the supervision of [Wolfram Koepf](#). Research and publications with programming in Maple and Maxima.

Maplesoft

(Remotely) Waterloo, Canada

Mathematical software developer, Maple external developer

June – August 2021

Part-time job for the integration of my Maple software into the Maplesoft system. Work under the supervision of [Jürgen Gerhard](#).

AIMS-Cameroon

Limbe

Teaching Assistant, Tutor

March 2019 – May 2019

Tutoring students in learning pure and applied mathematics.

AIMS-Cameroon

Limbe

Essay phase

April 2018 – May 2018

Computer Algebra with the Computer Algebra System (CAS) Maxima.

Developing a program able to compute the power series representation of a subfamily of hypergeometric type functions.

H2Altitude

Yaounde

Developer in Computer Engineering

December 2016 – August 2017

Data flow management using Talend (which also uses Java programming), MySQL and a little NoSQL and Apache Kafka on AWS.

As the company develops web applications, we were constantly using the languages Javascript, HTML 5, CSS 3, and the chosen framework was Symfony 2.

Working under pressure.

CIRAD

Yaounde

Engineer Internship And Collaboration

February 2016 – October 2016

Understanding, modeling and implementing an algorithm that predict the dynamics of forest processes (birth, growth and mortality).

○ Engineer Internship (6 months):

- Probability and Statistics: General clustering and Expectation-Maximization (EM) algorithm;
- Programming with R : Practical solution of the model obtained, simulation and perfect coincidence with the R package flexmix.

○ Collaboration, voluntary work (2 months) with Prof. Vivien Rossi to improve the efficiency of the R program obtained at the end of the internship: algorithmic and programming, differential calculus, optimization.

ENSP-Cameroon

Yaounde

Pre-engineer internship

July 2015 – September 2015

Symbolic computation with the Computer Algebra System (CAS) Singular.

Algorithmic and programming, field theory, Galois theory.

Intelligentsia Corporation

Yaounde

Mathematics teacher

June 2015 – July 2015

Teaching General Algebra, Real Analysis, and basic Topology in a class of 30–45 students to prepare entrance at universities.

SCHOLARSHIPS

DAAD Erasmus+ program

Kassel

Researcher, University of Kassel, Germany

June 2020 – December 2020

A stay in Germany used for a partnership between AIMS-Cameroon and the University of Kassel. This funding allowed me to extend my stay in Germany to the end of 2020 for some research works resulting from my Ph.D. thesis.

DAAD Erasmus+ program

Kassel

Ph.D. student, University of Kassel, Germany

November 2019 – April 2020

A stay in Germany used for a partnership between AIMS-Cameroon and the University of Kassel. This funding allowed me to extend my stay in Germany to April 2020 for the completion of my Ph.D. thesis.

DAAD STIBET

Kassel

Ph.D. student, University of Kassel, Germany

November 2018 – January 2019

First stay in Germany for my Ph.D. work.

COLLABORATIVE PAPERS

- With Worrell, James. On Rational Recursion for Holonomic Sequences. **April 2024**. To appear in the Proceedings of **CASC'24**. **Supplementary files**.
- With Luca, Florian. Concatenations of Terms of an Arithmetic Progression. Submitted. **April 2024**. **Supplementary files**. A short version of this paper is accepted as a poster for **ISSAC'24**.
- With Ait El Manssour, Rida and Sattelberger, Anna-Laura. **D-Algebraic Functions**. Submitted. **January 2023**. **Illustrations**.
- Tegui Tabuguia, Bertrand and Koepf, Wolfram. **Symbolic Conversion of Holonomic Functions to Hypergeometric-Type Power Series**. *Computer Algebra issue of the Journal of Programming and Computer Software*. **April 2022**. Volume 48. Pages 125-146. **Preprint version**.
- Tegui Tabuguia, Bertrand and Koepf, Wolfram. **FPS in Action: An Easy Way to Find Explicit Formulas for Interlaced Hypergeometric Sequences**. ACM Communication in Computer Algebra. **July 2022**. **Poster**.
- Tegui Tabuguia, Bertrand and Koepf, Wolfram. **On the Representation of Non-Holonomic Univariate Power Series**. *Maple Trans.* 2, 1, Article 14315, 18 pages. **August 2022**.
- Tegui Tabuguia, Bertrand and Koepf, Wolfram. **Power Series Representations of Hypergeometric-Type Functions**. In *Corless R., Gerhard J., Kotsireas I. (eds): Maple in Mathematics Education and Research. MC 2020*. Communications in Computer and Information Science, Springer. **July 2021**.
- Tegui Tabuguia, Bertrand and Koepf, Wolfram. **Hypergeometric-Type Power Series**. *4th International Conference "Computer Algebra", Moscow*. Pages 105-108. **June 2021**.

PERSONAL PAPERS

- Tegui Tabuguia, Bertrand. Computing with Hypergeometric-Type Terms. **April 2024**. To appear in *ACM Communication in Computer Algebra*. Software presentation at **ISSAC'24 Accompanying Software**.
- Tegui Tabuguia, Bertrand. Hypergeometric-Type Sequences. *Journal of Symbolic Computation*. December 2023. Published in **May 2024**. DOI: <https://doi.org/10.1016/j.jsc.2024.102328>. **Accompanying Software**.
- Tegui Tabuguia, Bertrand. **Arithmetic of D-Algebraic Functions**. **May 2023**. **Illustrations**. To appear.
- Tegui Tabuguia, Bertrand. **Operations for D-Algebraic Functions**. *ACM Communications in Computer Algebra*, Volume 57, Issue 2. Pages 51–56. **June 2023**. Software presentation at ISSAC'23. **Illustrations**.
- Tegui Tabuguia, Bertrand. **Guessing with Quadratic Differential Equations**. Software presentation

- at ISSAC'22. ACM Communication in Computer Algebra. **July 2022. Illustrations.**
- Tegui Tabugua, Bertrand. **Explicit formulas for concatenations of arithmetic progressions.** Submitted. **January 2022.**
 - Tegui Tabugua, Bertrand. **A Variant of van Hoeff's Algorithm to Compute Hypergeometric Term Solutions of Holonomic Recurrence Equations.** *J. Algorithm Comput.*. **December 2020.**
 - Tegui Tabugua, Bertrand. **An Algorithmic Random-Integer Generator based on the Distribution of Prime Numbers.** *Research Journal of Mathematics and Computer Science*, **2019; 3:16.** DOI: 10.28933/rjmcs-2019-06-1705.

TALKS & CONFERENCES

Workshop

Marseille, France

Invited Speaker

February 24 – 28, 2025

I accepted the invitation to give a talk at the workshop on **Singularities, Differential Equations, and Transcendence.**

Workshop

NC State University, USA

Invited Speaker

July 20 – 22, 2024

I accepted the invitation to give a talk at the **Workshop on Differential Algebra and Modeling.**

ISSAC'24

NC State University, USA

Software and Poster Presenter

July 24 – 27, 2023

I will present the mathematical software **HyperTypeSeq** and showcase my joint work with Florian Luca on a poster.

Kolchin Seminar

Online

Invited Speaker

October 6, 2023

Title: Differential elimination for the closure properties of D-algebraic functions.

SIAM AG meeting

Eindhoven University, Netherlands

Session Invited Speaker

July 10 – 14, 2023

Invited speaker for the Minisymposia on "Symbolic Combinatorics".

Maple Conference 2022

Waterloo, Canada

Algorithm and Software presenter, Virtual

November 02 – 03, 2022

I am one of the presenters for the theme Algorithm and Software. I talked about symbolic powers of functions defined by second-order linear ODEs.

The sixth annual meeting of the TRR 195

Speaker, Blaubeuren, Germany

September 19 – 22

I gave another version of my talk at ACA 2022 with connection to my programming for OSCAR (Open Source Computer Algebra Research System).

ACA 2022

Istanbul, Turkey

Session invited speaker

August 15 – 19, 2022

I am one of the invited speakers for the theme: D-finite Functions and Beyond: Algorithms, Combinatorics, and Arithmetic.

ISSAC'22

Lille

Poster and Software presenter

July 04 – 07, 2022

I presented a poster and software. The poster was about using FPS to find closed-form representations of interlaced hypergeometric sequences. My software was about an extension of holonomic guessing to quadratic guessing.

Workshop on Differential Algebra

Leipzig, Germany

Session chair

June 06 – 08, 2022

Tagung der Fachgruppe Computeralgebra

Munich, Germany

Speaker

March 09 – 11, 2022

I gave a presentation entitled: Power series formulas with m -fold hypergeometric term coefficients.

Maple Conference 2021

Waterloo, Canada

Algorithm and Software presenter

November 02 – 05, 2021

I was one of the presenters for the theme Algorithm and Software. *The talk was about non-holonomic power series.*

ISSAC 2021

Saint Petersburg, Russia

Attendant

July 19 – 23, 2021

Attended to keep good track on cutting-edge research in Computer Algebra.

4th International Conference “Computer Algebra”

Moscow, Russia

Contributed talk

June 28 – 29, 2021

I gave a talk on hypergeometric type power series. The corresponding extended abstract appear in the conference Proceedings.

Maple Conference 2020

Waterloo, Canada

Algorithm and Software presenter

November 02 – 06, 2020

I was one of the presenters for the theme Algorithm and Software. In this presentation, I made the first public demonstration of the most important result of my Ph.D. thesis: *Power series representations of hypergeometric type functions*. The corresponding paper was published in the conference Proceedings.

ICMS 2020

Braunschweig, Germany

Software Demo presenter

July 13 – 16, 2020

I was one of the software demo presenters. My algorithm, a variant of van Hoeij's algorithm, was accepted upon peer review. This was recorded in the conference Proceedings.

Workshop on Applied Algebra

Braunschweig, Germany

Poster presenter

June 07 – 08, 2019

I was accepted to present a poster from my paper on randomness and the distribution of primes.

Mathematical Software

- **HyperTypeSeq**. Software for computations in the ring of hypergeometric-type sequences.
- **NLDE** (NonLinear algebra and Differential Equations): package for computations with D-algebraic functions.
- **The New FPS**: state-of-the-art implementations for the Computer Algebra Systems (CASs) Maple and Maxima for computing formal power series, solving linear recurrence equations, and computing linear and quadratic differential equations. *Recently updated for some multivariate computations. . .*
- Github account: **T3gu1a**.

COMPUTER SKILLS

Very good computer and programming skills.

- **Maxima**: Computer Algebra System (CAS), used since 2018.
- **Maple**: favorite CAS, used since 2020.
- **Sagemath**: main CAS used at AIMS-Cameroon (2017-2018).
- **Singular**: CAS used in pre-engineer internship at ENSP (3 months) (2015).
- **R**: main language used during my engineering internship (9 months).
- **Julia, OSCAR**: Since March 2022.
- **Python**: used since 2016 for general programming: scientific computing, software development.
- **Most used web languages: HTML 5, CSS 3, Javascript, Php**: to develop web applications.
- **Java**: main programming language used for the three last years at ENSP Yaounde.
- **MySQL**: main system used for managing data bases at ENSP Yaounde (2013-2016).
- **Latex**: Permanently used to produce pdf documents since 2014.
- **Other languages used in the past**: C, Prolog, Singular, UML (for design).
- **Operating System**: Linux, Windows.
- **Keyboard blind typing**: very good speed.
- **Programming tasks**: Author of the Maple and Maxima worksheets of the book at <http://www.computer-algebra.org>.

During my free time in 2019, I thought and developed the game P&C Game, available on Google Playstore and at <https://bertrand-t3gu1.itch.io/pc-game>. A first version was done in Python, and a second using Javascript, CSS 3 and HTML 5. The latter was used to generate an apk-release for Google Playstore.

LANGUAGES

- **French:** Fluent *Native language*
- **English:** Good level *Main work language used since August 2017.*
- **German:** Basic *Level A1, Goethe Institute of Yaounde (10 September - 31 October 2018).
A2 in progress.*

PERSONAL SKILLS

- **Fast learning:** Anything related to computer programming or mathematics is loved and I am always excited to learn more. *I don't work fast, but I work all the time.*
- **Perfectionist:** During my Ph.D. work, I always wanted my codes to have the best efficiency even though my supervisor was already satisfied.

VOLUNTEERING

Tutoring mathematics to a class of 10-15 students of Terminal C (last scientific class in high school) class at the Evangelical Church of Cameroon in the street Manguier of Yaoundé.

INTERESTS & HOBBIES

- **Mathematics and their applications:** Symbolic Computation, Differential and Difference Algebra, Applied Algebraic Geometry, Dynamical Systems, Algorithmic Number Theory.
- **Computer programming:** Doing programming exercises in python from websites like Kattis, CodeChef.
- **Movies, series:** Genius (Einstein), Irrational man, One Tree Hill, Numb3rs, Hannah Arendt, Jobs, X+Y.
- **Drawing:** Anything beautiful.
- **Singing:** Pop, R&B, like The Fray, Gavin Degraw and James Arthur.
- **Dancing:** I have been a choreographer, I like harmonized dance.
- **Sport:** Football, favorite players in order: Ronaldinho, Cristiano Ronaldo, Ronaldo and Samuel Eto'o.

REFERENCES

Professor James Worrell

Professor of Computer Science, University of Oxford, UK.

Tel: +44 1865 273 843

Email: jbw@cs.ox.ac.uk

Prof. Dr. Bernd Sturmfels

Director of the Max Planck Institute for Mathematics in the Sciences, Leipzig, Germany.

Professor of Mathematics, my Mentor at MPI MiS

Tel: +49 341 9959 750

Email: bernd@mis.mpg.de

Prof. Dr. Wolfram Koepf

Professor of Computer Algebra, University of Kassel, Germany.

Ph.D. supervisor
Tel: +49 561 804 4245
Email: koepf@mathematik.uni-kassel.de

Dr. Jürgen Gerhard

Senior Director, Research at Maplesoft
Supervisor for the integration of my Maple software into Maple.
Email: jgerhard@maplesoft.com

[LinkedIn page](#)

Professor Marco Garuti (Sadly passed away 3 years ago)

Academic Director of AIMS-Cameroon.
Professor of Algebraic Geometry, University of Padova, Italy and AIMS-Cameroon.
Tel:(+237) 696 27 87 62 / (+39) 340 748 1744
Email: marco@aims-cameroon.org