

Antonio Casares

PhD Student in Theoretical Computer Science

+34 645 45 55 83

✉ antoniocasaressantos@gmail.com

🌐 www.labri.fr/perso/acasaessant/

🎂 Birth date: 11 april 1997

Last update: April 2022.

Research Experience

Oct 2020 – **PhD Thesis**, LaBRI, Université de Bordeaux, (France).

Now Title: *Algorithms for controller synthesis*.

Supervisors: Thomas Colcombet (IRIF, CNRS), Nathanaël Fijalkow (LaBRI, CNRS), Igor Walukiewicz (LaBRI, CNRS).

April 2020 – **Master Thesis**, IRIF, Université de Paris, (France).

July 2020 Title: *Optimal transformations of Muller conditions*.

Supervisors: Thomas Colcombet (IRIF, CNRS), Nathanaël Fijalkow (LaBRI, CNRS).

Sept 2018 – **Bachelor Thesis**, Universidad de Valladolid, (Spain).

July 2019 Title: *Valuations, Hardy fields and ω -minimal structures*.

Supervisor: Fernando Sanz Sánchez (Universidad de Valladolid).

Education

2019 – 2020 **Master in Mathematical Logic and Foundations of Computer Science**, Université de Paris, (France), Average grade: 19.26/20.

Supported by the Fondation Sciences Mathématiques de Paris.

2015 – 2019 **Bachelor in Mathematics**, Universidad de Valladolid, (Spain), Average grade: 8.88/10.

Premio Extraordinario Fin de Grado (Special award for the best student record).

2018 – 2019 **Erasmus exchange programme**, Université de Versailles, (France), Average grade: 18.74/20.

Last year of the Bachelor's degree. Courses of the first year of master on applied algebra.

Publications

Journals

2022 Invited to the special issue of Logical Methods in Computer Science (Declined).

For the paper *On the Minimisation of Transition-Based Rabin Automata and the Chromatic Memory Requirements of Muller Conditions*.

Conferences

Submitted **Half-Positional Objectives Recognized by Deterministic Büchi Automata**.

With Patricia Bouyer, Mickael Randour and Pierre Vandenhover.

ICALP 2022 **On the size of good-for-games Rabin automata and its link with the memory in Muller games**.

With Thomas Colcombet and Karoliina Lehtinen.

- TACAS 2022 **Practical Applications of the Alternating Cycle Decomposition.**
With Alexandre Duret-Lutz, Klara J. Meyer, Florian Renkin and Salomon Sickert.
- CSL 2022 **On the Minimisation of Transition-Based Rabin Automata and the Chromatic Memory Requirements of Muller Conditions.**
Received the Helena Rasiowa Award (Best Student Paper Award).
- ICALP 2021 **Optimal Transformations of Games and Automata using Muller Conditions.**
With Thomas Colcombet and Nathanaël Fijalkow.
- Preprints**
- 2021 **On the ESL Algorithm for Energy Games.**
With Pierre Ohlmann.

Talks

- May 2022 **Half-Positional Objectives Recognized by Deterministic Büchi Automata**
ANR Delta Meeting, CIRM, Marseille, France.
- Feb 2022 **On the Minimisation of Transition-Based Rabin Automata and the Chromatic Memory Requirements of Muller Conditions**
CSL 2022 (Online), Göttingen, Germany.
- Dec 2021 **On a correspondence between memory structures for Muller games and Rabin automata**
Seminar for the team MOVE, LIS, Marseille, France.
- Nov 2021 **On a correspondence between memory structures for Muller games and Rabin automata**
Seminar for the team LX, LaBRI, Bordeaux, France.
- Sept 2021 **The Arena-Independent Memory Requirements of Muller Conditions**
Highlights 2021 (online), Aachen, Germany.
- July 2021 **Optimal transformations of games and automata using Muller conditions**
ICALP 2022 (online), Glasgow, Scotland.
- July 2021 **On the minimisation of transition-based Rabin automata**
Seminar at the Hebrew University of Jerusalem (online), Israel.
- July 2021 **Optimal transformations of games and automata using Muller conditions**
Seminar Automata Group at IRIF, Paris, France.
- June 2021 **On the minimisation of transition-based Rabin automata**
ANR Delta Meeting, IRIF, Paris, France.
- June 2021 **Optimal transformations of Muller conditions**
GT ALGA Annual Meeting (online), Bordeaux, France.
- Feb 2021 **The synthesis problem: from logic to games**
Student Seminar of the Toulouse Mathematics Institute (online), Toulouse, France.
- Dec 2020 **Optimal transformations of Muller conditions**
Seminar of the Formal Methods team (online), LaBRI, Bordeaux, France.
- Nov 2020 **Memory requirements for generalised reachability games**
Presentation of a problem at Spotlight on Games Workshop (online).

July 2020 **Can we program using only for loops?**
National Meeting of Mathematics Students (ENEM), Valladolid (online), Spain.

Organization of Scientific Events and Professional Activities

Oct 2021– **Publicity Chair of Highlights of Logic, Games and Automata**
Now *Member of the Steering Committee.*

Dec 2021– **Vice-president of the AFoDIB (PhD student association)**
Now *LaBRI and INRIA, Bordeaux, France.*

Sept 2021– **Co-organizer of the Formal Methods and Models Seminar**
Now *LaBRI, Bordeaux, France.*

Sept 2021– **Co-organizer of the Sémi-doc Seminar (PhD student seminar)**
Now *LaBRI and INRIA, Bordeaux, France.*

Mars 2020– **Member of the board of the AFoDIB (PhD student association)**
Dec 2021 *LaBRI and INRIA, Bordeaux, France.*

Sept 2020 **Member of the Organizing Committee of Highlights of Logic, Games and Automata**
Online.

Reviewing activities

Conferences Reviewer for LICS 2021, MFCS 2021, GandALF 2021, FSTTCS 2021, STACS 2022, LICS 2022.

Journals Reviewer for ToCL (2021).

Attendance of Scientific Events

March 2022 Meeting of the GT DAAL, Lille, France.

Feb 2022 CSL 2022 (online).

Jan – May Simons Institute Spring 2021 research program. Participant in the Theoretical Foundations of Computer Systems program (online).

Sept 2021 IMS Workshop: Automata Theory and Applications 2021, (online).

Sept 2021 Highlights of Logic, Games and Automata 2021, (online).

July 2021 ICALP 2021, (online).

June 2021 Meeting of the ANR DELTA, IRIF, Paris, France.

Nov 2020 Spotlight on Games Workshop, (online).

June 2020 *MOVEP 2020* 14th Summer School on Modelling and Verification of Parallel Processes, (online).

July 2020 *XXI ENEM*, National Meeting of Mathematics Students, (online).

July 2018 *XIX ENEM*, National Meeting of Mathematics Students, Universidad de Valencia, Spain.

July 2017 *Algebraic Topology Summer School*, Gulbenkian Foundation, Lisbon, Portugal.

July 2017 Summer school on *Intelligent Transport Systems*, UNED, Plasencia, Spain.

Scholarships and Awards

- 2022 Helena Rasiowa Award (Best Student Paper Award of the conference CSL).
- 2019 Laureate of the *Paris Graduate School of Mathematics (PGSM)*. Scholarship awarded by the *Fondation Sciences Mathématiques de Paris*
- 2019 *Premio extraordinario fin de grado, Universidad de Valladolid*. Special award to the best record among the mathematics graduates of the year.

Teaching

- Spring 2022 **Algorithmique des Tableaux (1st year bachelor)**, *Teacher assistant*, 32 hours, Sorting algorithms in Python.
Université de Bordeaux, France.
- Spring 2022 **Modèles de la Programmation et du Calcul (3rd year bachelor)**, *Teacher assistant*, 32 hours, Automata theory.
Université de Bordeaux, France.
- Spring 2021 **Modèles de la Programmation et du Calcul (3rd year bachelor)**, *Teacher assistant*, 32 hours, Automata theory.
Université de Bordeaux, France.
- Fall 2020 **Coloration Informatique (1st year bachelor)**, *Teacher assistant*, 32 hours, Programming project in Python.
Université de Bordeaux, France.

Other Interests

Music (violin and piano, former member of several orchestras: OSiUP, JOUVA, BISYOC). Philosophy of science, language and the mind. Sports (ultimate frisbee, badminton and basket-ball). Dancing (salsa). Board games.