

**Warning:** [2026-07-05 20:09] this document is a print-out of the Ciência-iul web portal and was automatically generated at the labeled date. The document has a mere informational purpose and represents the information contained on Ciência\_Iscte at that date.

## Carlos Santos

### Professor Auxiliar Convidado

Department of Mathematics (ISTA)

### Contacts

|               |                             |
|---------------|-----------------------------|
| <b>E-mail</b> | Pereira.Santos@iscte-iul.pt |
| <b>Office</b> | D2.06                       |

### Curriculum

Carlos Pereira dos Santos has undergraduate, MSc and PhD degrees in mathematics from the University of Lisbon and he is currently researcher of the Center for Mathematics and Applications (NovaMath), FCT NOVA and professor at ISCTE – University Institute of Lisbon. He researches in the field of Combinatorial Game Theory, stresses the PhD under the guidance of Richard Nowakowski from Dalhousie University, world's top expert on that topic. He published several papers in international journals and presented at major conferences devoted to the subject. About popularization of mathematics, he published the book «Mathematics from The Da Vinci Code», co-authored with Luis Tirapicos and Nuno Crato, he participated in the projects «Games with History» and «Games from Around the World» (Visão/Público) with João Pedro Neto and Jorge Nuno Silva. For 10 years, he was Vice-President of the Ludus Association, one of the most relevant Portuguese institutions dedicated to recreational mathematics. He has been member of scientific committees of pioneering projects such as the «Portuguese Championship of Mathematical Games» and the «Recreational Mathematics Colloquia». He was managing editor of the Recreational Mathematics Magazine. About Mathematics Education in Portugal, he teaches and researches subjects related to elementary mathematics. Also noteworthy is the fact that, for three years, he has made the management of the Training Centre for Teachers of the Portuguese Mathematics Society and, after, he was the director of the Training Centre for Teachers of the Ludus Association. He organized and developed dozens of courses on various topics. Carlos Santos is a big fan of the Singapore Math, and he was managing editor of the Jornal das Primeiras Matemáticas. Regarding hobbies, Carlos Santos is International Chess Master. He was the Portuguese Champion in 1998 and 2000 and he was 5th in the under-18 World Championship in 1989.

On this page, only the outputs obtained since 2024, the year in which the faculty member joined ISCTE, are listed. To view the complete CV, please consult any of the other platforms made available here (ORCID, CiênciaVita, etc.).

## Research Interests

Combinatorial Game Theory

## Academic Qualifications

| University/Institution                         | Type | Degree     | Period |
|--|------|------------|--------|
| Universidade de Lisboa - Faculdade de Ciencias | PhD  | Matemática | 2010   |

## Teaching Activities

| Teaching Year | Sem. | Course Name   | Degree(s)   | Coord |
|---------------|------|---|---|-------|
| 2026/2027     | 2º   | Complements on Differential Calculus                          | Bachelor Degree in Management;  | No    |
| 2026/2027     | 1º   | Linear Algebra and Applications I                             | Bachelor Degree in Applied Mathematics for Economics and Finance;       | Yes   |
| 2026/2027     | 1º   | Topics of Real Analysis                                       | Master Degree in Financial Mathematics (ISCTE/FCUL);                    | Yes   |
| 2025/2026     | 2º   | Complements on Differential Calculus                          | Bachelor Degree in Management;  | No    |
| 2025/2026     | 1º   | Mathematics and Numerical Methods for Economics and Finance I | Doctorate Degree (PhD) in Economics; Doctorate Degree (PhD) in Finance; | Yes   |
| 2025/2026     | 1º   | Differential and Integral Calculus                            | Bachelor Degree in Management;  | No    |
| 2024/2025     | 2º   | Optimization  |   | No    |
| 2024/2025     | 1º   | Mathematics   |   | No    |

## Supervisions

### • M.Sc. Dissertations

- Ongoing

|   | Student Name        | Title/Topic   | Language | Status     | Institution                |
|---|---------------------|---|----------|------------|----------------------------|
| 1 | Miguel Cotrim Faria | Combinatorial Game Theory – Two-Dimensional Subtraction Games | English  | Developing | Instituto Superior Técnico |

## Total Citations

|                 |    |
|-----------------|----|
| Web of Science® | 0  |
| Scopus          | 21 |

## Publications

### • Scientific Journals

#### - Scientific journal paper

|   |  |
|---|--|
| 1 | Michael Fisher, Neil McKay, Rebecca Milley, Richard J. Nowakowski & Santos, C. (2025). Indecomposable combinatorial games. <i>Journal of Combinatorial Theory, Series A</i> . 209, 105964<br>- Times Cited Google Scholar: 1           |
| 2 | Abuku, T. , Manabe, H. , Nowakowski, R. J. , Santos, C. & Suetsugu, K. (2024). A complete solution for the partisan chocolate game. <i>International Journal of Game Theory</i> . 53 (4), 1369-1384<br>- Times Cited Google Scholar: 1 |
| 3 | Larsson, U., Nowakowski, R. J. & Santos, C. (2024). A complete solution for a nontrivial ruleset with entailing moves. <i>The Electronic Journal of Combinatorics</i> . 31 (4)<br>- Times Cited Google Scholar: 3                      |

### • Books and Book Chapters

#### - Book chapter

|   |   |
|---|---|
| 1 | Santos, C., Richard J. Nowakowski & Urban Larsson (2025). Absolute combinatorial game theory. In <i>Games of No Chance 6.</i> : Cambridge University Press.<br>- Times Cited Scopus: 9<br>- Times Cited Google Scholar: 27  |
| 2 | Santos, C., Richard J. Nowakowski & Urban Larsson (2025). Affine normal play. In <i>Games of No Chance 6.</i> : Cambridge University Press.<br>- Times Cited Google Scholar: 1  |
| 3 | Santos, C., Richard J. Nowakowski & Urban Larsson (2025). Infinitely many absolute universes. In <i>Games of No Chance 6.</i> : Cambridge University Press.<br>- Times Cited Scopus: 4<br>- Times Cited Google Scholar: 3   |
| 4 | Santos, C., Richard J. Nowakowski, Urban Larsson, Rebecca Milley & Gabriel Renault (2025). Reversibility, canonical form, and invertibility in dead-ending misère play. In <i>Games of No Chance 6.</i> : Cambridge University Press.<br>- Times Cited Scopus: 7<br>- Times Cited Google Scholar: 3 |

|   |   |
|---|---|
| 5 | <p>Santos, C., Richard J. Nowakowski, Alfie M. Davies, Urban Larsson, Rebecca Milley &amp; Aaron N. Siegel (2025). Combinatorial game theory monoids and their absolute restrictions: a survey. In Games of No Chance 6.: Cambridge University Press.</p> <p>- Times Cited Scopus: 1</p> <p>- Times Cited Google Scholar: 1</p> |
|---|---|

## • Conferences/Workshops and Talks

### - Talk

|   |   |
|---|---|
| 1 | Santos, C. (2025). Workshop on Combinatorial Game Theory. Summer School on Games.   |
| 2 | Santos, C. (2025). Cyclic impartial games with carry-on moves. Virtual Combinatorial Games Seminar.                       |
| 3 | Santos, C. (2025). Cyclic impartial games with carry-on moves. Combinatorial Game Theory Colloquium V.                    |
| 4 | <p>Santos, C. (2024). Affine Normal Play. Virtual Combinatorial Games Seminar.</p> <p>- Times Cited Google Scholar: 1</p> |
| 5 | Santos, C. (2024). Combinatorial Game Theory monoids: an overview. Japan Combinatorial Game Theory Workshop.              |
| 6 | Santos, C. (2024). Impartial games in finite graphs. 16th East Coast Combinatorics Conference.                            |
| 7 | Santos, C. (2024). Some open problems in Combinatorial Game Theory. Games at Mumbai.                                      |
| 8 | Santos, C. (2024). A quick journey into Combinatorial Game Theory. Games at Mumbai.                                       |

## Organization/Coordination of Events

| Type of Organization/Coordination                 | Event Title                                | Organizer              | Year |
|---|--|------------------------|------|
| Member of scientific event committee              | Combinatorial Game Theory Colloquium V     | Associação Ludus       | 2025 |
| Member of scientific event committee              | RMC VIII   G4G EUROPE                      | Associação Ludus       | 2025 |
| Member of scientific event's organizing committee | Theoretical and Computational Algebra 2024 | Universidade de Aveiro | 2024 |

## Diffusion Activities

| Activity Type                             | Event Title                        | Activity Description | Year |
|---|------------------------------------|----------------------|------|
| Talk/Conference in public diffusion event | European Researchers' Night        | Planet Smullyan      | 2025 |
| Talk/Conference in public diffusion event | International Conference Joga-Mate | Planet Smullyan      | 2025 |

|   |   |  |      |
|---|---|--|------|
| Talk/Conference in public diffusion event | Summer School SPM                       | Participation in two panels                          | 2025 |
| Talk/Conference in public diffusion event | Mathematics, Art and Creativity         | Mathematics in «Os Lusíadas»                         | 2025 |
| Talk/Conference in public diffusion event | Meeting «Camões ontem e hoje»           | Sung Astronomy in «Os Lusíadas»                      | 2025 |
| Talk/Conference in public diffusion event | 9th Iberian Mathematical Meeting        | Some notes on Escher's regular division of the plane | 2024 |
| Talk/Conference in public diffusion event | European Researchers' Night             | Activity: Planeta Smullyan                           | 2024 |
| Talk/Conference in public diffusion event | Camões: When Literature and Nature meet | Sung Astronomy in «Os Lusíadas»                      | 2024 |
| Talk/Conference in public diffusion event | Lectures ProfNOVA                       | Sung Astronomy in «Os Lusíadas»                      | 2024 |

## Scientific Editing/Reviewing Activities

| Type of Activity                           | Journal Title                        | ISSN/Quartile | Period     | Language |
|--|--------------------------------------|---------------|------------|----------|
| Member of scientific journal editing staff | International Journal of Game Theory |               | Since 2024 | English  |
| Member of scientific journal editing staff | Recreational Mathematics Magazine    |               | Since 2014 | English  |