

# Thomas Brosnan

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0871095522

## Education

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| <b>Trinity College Dublin</b>  | 2021 – Present |
| BA (Hon) In Theoretical Physics, Senior Sophister student. Expected grade: I-I.        |                |
| <b>St Colmcille's Secondary School - Dublin</b>  | 2015-2021      |
| Leaving certificate, 613 points, H1's in Physics, Maths, Applied Maths, DCG, Chemistry |                |

## Research Experience

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| <b>Fourth Year Capstone Project</b>  | 2024 September - Present |
| <i>Trinity College Dublin - School of Mathematics</i>  |                          |
| <ul style="list-style-type: none"><li>Undertaking a research project under the supervision of Manuela Kulaxizi on "Quantum Field Theory in deSitter spacetime"</li></ul>   |                          |
| <b>Breakthrough Listen Internship</b>  | 2024 June - August       |
| <i>University of California, Berkeley/Irish I-LOFAR Observatory</i>  |                          |
| <ul style="list-style-type: none"><li>Conducted research as part of Breakthrough Listen's Search for Extraterrestrial Intelligence, supervised by Professor Evan Keane.</li><li>Developed a pipeline for evaluating the efficiency of single pulse detection algorithms.</li><li>Coordinated dual site observations of exoplanets and pulsars using Irish and Swedish I-LOFAR radio telescopes.</li><li>Invited to present findings at Breakthrough Discuss 2024, University of Oxford.</li><li>Currently writing a paper titled "On the Response of Single Pulse Search Algorithms" to document the research results.</li></ul> |                          |
| <b>Hamilton Trust Internship</b>   | 2023 May - July          |
| <i>Trinity College Dublin - School of Mathematics</i>  |                          |
| <ul style="list-style-type: none"><li>Completed a research project under the supervision of Professor Evan Keane</li><li>Title - Testing theories of gravity using Pulsars</li><li>Developed code to generate mass-mass diagrams for pulsar binaries. Derived equations for mass-mass diagrams for alternate theories of gravity</li><li>Link to GitHub - <a href="https://github.com/Tbrosnan12/Hamilton-trust-2023">https://github.com/Tbrosnan12/Hamilton-trust-2023</a></li></ul>  |                          |

## Work Experience

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| <b>Teaching Assistant</b>   | 2023 - Present |
| <i>Trinity College Dublin - School of Mathematics</i>   |                |
| <ul style="list-style-type: none"><li>Graded and gave tutorials for first year module "Techniques in Theoretical Physics". Currently grading second year module: "Advanced Classical Mechanics"</li></ul> |                |
| <b>Applied Maths Teacher</b>  | 2021-Present   |
| <i>St Colmcille's Secondary school - Dublin</i>   |                |
| <ul style="list-style-type: none"><li>Actively teaching 5th and 6th year classes of around 15 students</li></ul>  |                |
| <b>Coding Instructor</b>  | 2021 - 2022    |
| <i>Olus Education - Dublin</i>  |                |
| <ul style="list-style-type: none"><li>Involved teaching classes in Java, Python and HTML</li></ul>  |                |

## Awards & Honors

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| <b>Arthur Lyster Prize</b>  | 2021 |
| <i>Trinity College-Achieved prize for Junior Fresh mathematics results</i>            |      |
| <b>Trinity Entrance Award</b>   | 2021 |
| <i>Trinity College Dublin-Achieved prize on the basis Leaving certificate results</i> |      |

## Specialized Skills

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**Programming Languages:** Java, Python, Shell scripting (Bash, csh, ect), C++. Git

**Linux:** Experience with large data management on Linux servers.

**I-LOFAR Telescope:** Experience creating observing scheduals for the Irish I-LOFAR radio telescope.

**LaTeX:** I have written detailed notes, lab reports and papers all in LaTeX. I gave an “Introduction to LaTeX” seminar for the TPSA in October 2024.

## Other Interests

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**Treasurer of the Theoretical Physics Student Association (TPSA):** As treasurer I developed and managed budgets to support ongoing activities while identifying and securing new funding sources to sustain and expand operations.

**Captain of the PLANCKS Team:** I was captain of the team that represented Trinity at the UK & Ireland preliminary and subsequently Ireland at the international final. PLANCKS is a exam-based physics competition for bachelor’s and master’s students.

**Hackathons:** I have had the opportunity during my undergraduate degree to both participate and co-organise ”Hackathons” which are time-bound events where teams collaboratively create innovative physics based solutions to specific challenges, often based on socio-economic problems.

**Open Source Software & Learning Materials:** I am passionate about the open-source philosophy, which emphasizes accessibility, collaboration, and shared knowledge. To contribute to this ethos, I make my notes and source code freely available on my website <https://tbrosnan12.github.io>, where they are accessible to anyone interested in learning, or building upon my work.

**Basketball:** I am a member of my local basketball Club Eanna BC, where I play for their division 4 team.

**Reading:** I read extensively both to further my knowledge of my field and recreationally particularly works of Sci-Fi and Fantasy.

## References

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- Professor Evan Keane:     evan.keane@tcd.ie
- Professor Chaolun Wu     wuch@tcd.ie
- Professor Manuela Kulaxizi     kulaxizm@tcd.ie