

Jakub Dranczewski

I am a Physics PhD student at Imperial College London and IBM Research Europe
with a passion for experimental investigation and threading interesting theory into it.

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Education

- 2021- **PhD student**, *Imperial College London & IBM Research Europe - Zürich*
Supervisors: Prof. Kirsten Moselund, Prof. Riccardo Sapienza
- H2020 Marie Skłodowska-Curie Innovative Training Networks project (GA no. 859841): "COntrolling network RAndom Lasers on chip" (CORAL)
- 2017-2021 **MSci Physics student**, *Imperial College London*
- First-Class Honours, graduated top of the class, grade: 82.48%
 - Masters thesis: *Time-Varying and Nonlinear Effects in an Indium Tin Oxide Nanolayer*
 - Awarded the Abdus Salam Undergraduate Prize, Governors' MSci Prize in Physics, Ken Allen Prize for Academic Excellence (twice) and the Richard Learner Prize for Excellence in Second Year Laboratory.
- 2016-2017 **A Levels course**, *Dulwich College London*
- Physics, Mathematics, Further Mathematics, Computer Science; A*A*A*A*.
 - Course accelerated, completed in a year as a scholarship organised by the Polish Children's Fund.
- 2014-2016 **I Liceum Ogólnokształcące w Zielonej Górze**, *Polish high school*

Research and Work Experience

- 2017-2020 **Teaching at the undergraduate and secondary school level**
- Demonstrating for Year 1 Laboratory and the Python Helpdesk at Imperial College London (2020).
 - Private tutoring of A Level students in Physics and Computer Science, including Python.
- 2.07 – 29.07.2020 **Remote Undergraduate Research Opportunities Programme (UROP) placement**, *Imperial College London*
Supervisor: Prof. Roland A Smith
- Produced a ray tracing solution for predicting optical trapping of arbitrarily-shaped targets.
 - Studied ray and wave optics, accelerating Python code, and quaternion-based rotational dynamics.
- 5.08 – 27.09.2019 **Undergraduate Research Opportunities Programme placement with the Experimental Solid State group**, *Imperial College London*
Supervisors: Prof. Riccardo Sapienza, Dr Stefano Vezzoli
- Gained basic understanding of multiple concepts in nonlinear optics and nanostructure design.
 - Work involved designing and preparing experimental equipment and procedures, taking measurements, analysing data and applying existing theoretical models; contributed to a publication.
- 6.08 – 28.09.2018 **Undergraduate Research Opportunities Programme placement with the Plasma Physics Group**, *Imperial College London*
Supervisor: Dr Jack Hare
- Developed *Magic2*, a fully functional GUI programme used in the research group for interferometry data processing, as well as other scripts used for data analysis. Work resulted in publication.
 - Maintenance work on the Mega Ampere Generator for Plasma Implosion Experiments (MAGPIE); gained insight into designing and building scientific equipment.
- 2016, 2017 **Research Internships in the Institute of Physics of the Polish Academy of Sciences**, *organised through the Polish Children's Fund*
Supervisors: Dr Łukasz Kłopotowski, MSc Julia Miłośz, MSc Zygmunt Miłośz
- Three placements in two laboratories. Shadowing and independent experimental work related to measuring photoluminescence decays and spectra of quantum dots, as well as imaging graphite with a scanning tunneling microscope.
- 2016-2017 **Research on the behaviour of ferrofluids in inhomogeneous magnetic fields, and on the balloon air horn**, *as team UK Captain for the International Young Physicists' Tournament 2017 finals in Singapore*
- Created multiple experimental set-ups for measurements involving sound, surface tension, surface instability inspection, object tracking in video, magnetic permeability, and fluid density.

Skills

Programming	Fluent in Python (numpy/scipy, matplotlib, Jupyter Notebooks, data analysis, graphical interfaces) , web development (JavaScript, PHP, MySQL), LaTeX, basic experience with C, C++, and Matlab.
Software	Experience with the Microsoft Office suite, Origin Pro for data analysis and graphing , basic experience with LabView.
Electronics	Experience working with the Arduino platform, Raspberry Pi computers, low-level microprocessor programming , as well as basic electronics.
Experiments	Worked with optical table equipment, short and high-energy laser pulses, oscilloscopes and signal generators, time tagged time-resolved data collection, computer measurement systems, and advanced imaging equipment (STM, SEM).
Nanofabrication	Experience working in a research cleanroom environment , work with plasma etching, material deposition, e-beam and optical lithography.
Languages	English , advanced (IELTS mark 8.5/9); Polish , native speaker; German , basic.

Achievements and Awards

2020	International Research Opportunities Programme placement at the Massachusetts Institute of Technology (MIT) , including bursary of £5600, cancelled due to Covid-19, part of funds granted for a remote UROP project at Imperial College
2019	EPSRC Vacation Bursary, £2581 , funding for the UROP project with the Experimental Solid State Group
2018, 2019	Finalist (2018) and Runner-up (2019) in the Royal College of Science Union <i>Science Challenge</i> , for popular science videos on quantum algorithmics and strong AI
2016–2017	During the year in Dulwich College: <ul style="list-style-type: none">○ Finalist of the <i>BAFTA Young Game Designers Game Making Award</i>○ Gold and a Top 50 mark in the second stage of the <i>British Physics Olympiad</i>○ Team captain of team UK in the <i>International Young Physicists' Tournament</i> 2017 in Singapore○ Finalist of the <i>UK Bebras Computational Thinking Challenge</i>
2016	Laureate of the second edition of the Adamed SmartUP scientific and educational programme , awarded a personal tutoring programme, including participation in two editions of the <i>Science: Polish Perspectives</i> conference
2014–2016	Scholarship of the Marshal for the Lubusz Voivodeship (twice), The <i>Pasjopolis</i> scholarship , total of £1300, awarded to students showing the best academic performance, future prospects, and passion for their field

Publications

2020	Efficient third harmonic generation from FAPbBr₃ perovskite nanocrystals , <i>A Rubino, T Huq, J Dranczewski et al.</i> , <i>J. Mater. Chem. C</i> , 2020, 8, 15990-15995, https://doi.org/10.1039/D0TC04790B
2019	Two-colour interferometry and Thomson scattering measurements of a plasma gun , <i>J D Hare, J MacDonald, S N Bland, J Dranczewski et al.</i> , <i>Plasma Phys. Control. Fusion</i> , 61, 085012, https://doi.org/10.1088/1361-6587/ab2571

Volunteering and Interests

2019-2021	Committee Member of the Imperial College Dramatic Society <ul style="list-style-type: none">○ Taken on roles ranging from production manager to lighting designer for multiple shows and events, which all required detailed planning, team management, budgeting, creativity, and ability to work with a large variety of equipment (often at short notice).
2020-2021	Imperial College Science Fiction and Fantasy Society Systems Administrator
2014-2017	Member of the <i>Młodzi Lokalni (Young Locals)</i> voluntary association <ul style="list-style-type: none">○ Responsibilities included managing the online presence of the association, developing custom content management systems, graphic design, and taking part in the organisation of some city-wide events.
Hobbies	New technologies, photography, science-fiction and fantasy, art and poetry, cycling.