Dr Robert Michael Jones PhD

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Page: KCL/Robert-Jones GitHub : JonesRobM

Skills and Experience:

- 5 years of expertise in using and applying time dependent density functional theory (TDDFT) and molecular dynamics (MD).
- Writing successful grant applications for high performance computing resources.
- Experienced in delivering oral presentations to a range of audiences of mixed backgrounds.
- Experienced in writing articles for scientific journals and the general public.
- Fully Funded CDT student on the Cross-Disciplinary Approaches to Non-Equilibrium Systems (CANES) programme at King's College London.
- Develop cross-platform parallelised software for CPU and GPU.
- Recipient of Dean's Excellency Award and prestigious Geoffery Eichholz Scholarship at The University of Leeds.
- Spoken Languages:
    - English – Native / Fluent
    - Italian – Self-taught conversational
    - German – Self-taught conversational
    - French – 20 Credit Intermediate language course at the University of Leeds
- Coding languages:
    - Python – Most proficient – 4+ years in Tensorflow and PyTorch ML/AI models.
    - Fortran – Developing MD software with Open MPI and learning to integrate CUDA.
    - C++ - Learning as an additional language. Not regularly used for development.
    - SQL Database management and querying.
    - Proficient in UNIX systems and bash scripting.
    - LaTeX for writing and compiling scientific manuscripts and books.

Work:

Postdoctoral Research Associate, King's College London **February 2023 – October 2024**

Supervision – Emilio Pisanty **Amelle Zair – Group Lead**

- Conducting research regarding attosecond science using numerical and theoretical models.
- Describing the polarisation states of complex light fields to describe experimental procedures.
- Writing and assisting the writing of scientific manuscripts for prestigious journals.
- Providing essential knowledge on numerical methods for modelling ultrafast transient responses in atoms, molecules, and solids.
- Participating in broader departmental events and collaborating with internal groups with numerical models and expertise in ab initio techniques.

Graduate Teaching Assistant, King's College London **October 2019 – December 2023**

- Demonstrate fundamental physics skills and techniques in undergraduate teaching laboratories.
- Have demonstrated and led workshops in third year quantum mechanics modules.
- Nominated for a teaching excellency award by my students.

Education:

PhD King's College London **September 2019 – December 2022**

- Researching metallic nanoalloys across a range of structural conformations and sizes at both the classical level; to gain insight into the structural properties and stability of such nanoparticles, and the quantum mechanical; evaluating optical properties which elucidate upon the potential catalytic performance of a given nanostructure.
- Co-organise a weekly series of internal seminars and journal clubs within the Photonics & Nanotechnology group.
- Received two fully funded awards to work at UPV/EHU and contribute to the research output of the European Theoretical Spectroscopy Facility (ETSF).
- Highly experienced in working with High Performance Computing architecture. Regularly receiving grants for resources with national and European computational facilities.
- Successfully written and defended multiple grant applications for computational resources from the Materials Chemistry Consortium.
- Developed Sapphire™, a fully integrated metallic nanoparticle creation, simulation, and analysis environment. Written in a mixture of Python and Fortran.
- Conducted evidence-based research projects on novel nanomaterials and catalysis.

MSC in Non-Equilibrium Systems, King's College London **September 2018 – September 2019**

Classification: Distinction

Modules included: Statistical learning, modelling quantum many-body systems, theoretical treatment of nanosystems, simulation methods for non-equilibrium systems.

MPhys, BSc in Theoretical Physics, University of Leeds **September 2014 – June 2018**

Classification: First Class Honours

Modules included: Advanced quantum mechanics, cosmology, statistical physics, computing, advanced mechanics, geometry, general relativity and French.

Achievements: Treasurer, Sports Secretary and captain of Rugby team for Physics Society.
School representative for School of Physics and Astronomy.
Hosted national conference for university student network for the Institute of Physics (IOP).

Research Output:

Publications:

- Vanzan, M., Jones, R..M., Corni, S., D'Agosta, R. and Baletto, F. (2022), "**Exploring AuRh nanoalloys: a computational perspective on the formation and physical properties.**" ChemPhysChem. 10.1002/cphc.202200035
- Zhao, W., Jones, R..M., D'Agosta, R. and Baletto, F. (2022), "**Making Copper, Silver and Gold Fullerene cages breathe."** Journal of Physics: Condensed Matter 10.1088/1361-648X/ac5b00
- Jones, R..M., D'Agosta, R. and Baletto, F. (2022) "**The effects of Pt doping on the optical properties of Au_{20}."** European Physical Journal: Applied Physics 10.1051/epjap/2022220011
- Jones, R.M., et al. (2022) **Structural characterisation of nanoalloys for (photo)catalytic applications with the `Sapphire` library.** Faraday Discussions 10.1039/D2FD00097K

Contributed talks:

- Summer School MATERIALS 4.0 - TU Dresden (August 2019): "Plasmonic Nanocatalysis - Do shape and size matter?"
- Non-Equilibrium and Environment Effects on Nanoalloys – Nanoalloys International Research Network - University of Paris (December 2021 – Postponed): "Multiscale modelling of Au-Pt nanoparticles to determine optical activity"
- Thomas Young Centre Student Day (May 2022): "Multiscale screening of plasmon enhanced photocatalysts"
- London Plasmonics Forum (June 2022): "Multiscale screening of plasmon enhanced photocatalysts"
- International Conference on Theoretical Aspects of Catalysis – University of Lyon (June 2022): "Multiscale screening of plasmon enhanced photocatalysts"
- Nanoalloys: recent developments and future perspectives Faraday Discussion – Royal Society of Chemistry (September 2022): "Screening and classification of plasmon enhanced photocatalytic nanoalloys"
- "How to make a lightsaber (in theory)" – https://thenextweb.com/news/how-to-make-a-lightsaber-star-wars-day

Personal Interests:

- Outdoor enthusiast, hobbies include rock climbing, hiking and mountain unicyling.
- Enjoy team and individual sports, particularly running and rugby.
- Learning foreign languages and experiencing diverse cultures.
- Musician – bass guitar and vocalist – experience of performing live.
- Writing my own books. Predominantly fiction and fantasy.