

EMPLOYMENT HISTORY

Lawrence Berkeley National Laboratory

2022 – present

Quantum Measurements Group, Physics Division

Postdoctoral researcher

EDUCATION

University of Oxford

2018 – 2022

Rudolf Peierls Centre for Theoretical Physics

PhD, Theoretical Physics

Advisors: John Wheeler & Subir Sarkar

- Awarded a Clarendon Scholarship for doctoral students with an outstanding academic record

Imperial College London

2014 – 2018

MSci, Physics (First Class Honours)

Thesis: Aspects of branes in supergravity (supervised by Kellogg Stelle)

ACADEMIC SERVICE

Organiser of the conference on [Next-Generation Quantum Materials for Quantum Computing, Sensing, and Microelectronic Devices](#) at the Molecular Foundry, Berkeley Lab

Journal referee for Physical Review Letters, Physical Review D, and Physical Review Applied

Grant referee for the Gordon and Betty Moore Foundation

Contributor to a white paper on future directions in quantum sensing for nuclear physics

PUBLICATIONS

An asterisk indicates an alphabetical author list, as is conventional in particle physics.

18. **Future directions in nuclear β decay at FRIB and beyond**

Under review at Journal of Physics G: Nuclear and Particle Physics [arXiv:2607.22983]

G. King et al.

17. **Dark Matter Detection Using Phonon Sensing in Amorphous Materials***

Under review at Phys. Rev. Lett. [arXiv:2603.22390]

I. Bloch, S. Knapen, A. Madden, [G. Marocco](#)

16. **Three-dimensional squeezing of optically levitated nanospheres**

Phys. Rev. A 114 (2026) 1, 013504 [arXiv:2601.22283]

[G. Marocco](#), D. Moore, D. Carney

15. **Mechanical Sensors for Ultraheavy Dark Matter Searches via Long-range Forces**

Phys. Rev. D 112 (2025) 7, 072003 [arXiv:2503.11645]

J. Qin, D. Amaral, S. Bhave, E. Cai, D. Carney, R. Lang, S. Li, A. Marino, [G. Marocco](#), C. Marvinney, J. Newton, J. Taylor, C. Tunnell

14. **Impulse measurements enhanced with squeezed readout light**

Phys. Rev. Res. 7 (2025) 3, 033041 [arXiv:2502.05168]

T. Lee, J. Beckey, [G. Marocco](#), D. Carney

13. **Spin-dependent dark matter scattering in quasi-two-dimensional magnets**
Phys. Rev. D 112 (2025) 3, 035030 [arXiv:2501.18120]
G. Marocco, J. Wheeler
12. **Broadband phonon production from axion absorption***
JHEP 03 (2025) 080 [arXiv:2411.10542]
I. M. Bloch, S. Knapen, A. Madden, G. Marocco
11. **A Superconducting Levitated Detector of Gravitational Waves***
Phys. Rev. Lett. 134 (2025) 18, 181402 [arXiv:2408.01583]
D. Carney, G. Higgins, G. Marocco, M. Wentzel
10. **Bounds on heavy axions with an X-ray free electron laser**
Phys. Rev. Lett. 134 (2025) 5, 055001 [arXiv:2404.17333]
J. Halliday, G. Marocco, et al.
9. **Quantum measurements in fundamental physics: a user's manual***
SciPost Phys. Rev. 2 (2026) [arXiv:2311.07270]
J. Bekey, D. Carney, G. Marocco
8. **Detection of high-frequency gravitational waves using high-energy pulsed lasers**
Class. Quantum Grav. 40 (2023) 15, 155006 [arXiv:2301.08163]
G. Vacalis, G. Marocco, J. Bamber, R. Bingham, G. Gregori
7. **Measuring Unruh radiation from accelerated electrons**
Eur. Phys. J. C 84 (2024) 5, 475 [arXiv:2301.06772]
G. Gregori, G. Marocco, S. Sarkar, R. Bingham, C. Wang
6. **Blast from the past II: Constraints on heavy neutral leptons from the BEBC WA66 beam dump experiment***
SciPost Phys. 13 (2022) [arXiv:2208.00416]
R. Barouki, G. Marocco, S. Sarkar
5. **Dark photon limits from magnetic fields and astrophysical plasmas**
[arXiv:2110.02875]
G. Marocco
4. **Stimulated Laser Light Shining Through Wall Search for Axion Detection**
Phys. Rev. D 105 (2022) 3, 035031 [arXiv:2109.14663]
K. A. Beyer, G. Marocco, R. Bingham, G. Gregori
3. **Parametric co-linear axion-photon instability**
Phys. Lett. B 839 (2023) 137759 [arXiv:2108.01489]
K. A. Beyer, G. Marocco, C. Danson, R. Bingham, G. Gregori
2. **Blast from the past: Constraints on the dark sector from the BEBC WA66 beam dump experiment***
SciPost Phys. 10 (2021) 2, 043 [arXiv:2011.08153]
G. Marocco, S. Sarkar
1. **Axion detection through resonant photon-photon collisions**
Phys. Rev. D 101 (2020) 9, 095018 [arXiv:2001.03392]
K. A. Beyer, G. Marocco, R. Bingham, G. Gregori

INVITED TALKS

Quantum West conference	Jan 2026
FRIB Theory Alliance: Future directions in nuclear beta decay at FRIB	Sep 2025
Caltech, High Energy Theory seminar	May 2025
Aspen Winter Conference on High Energy Physics	Mar 2025
Mainz Institute for Theoretical Physics, Workshop on Quantum Sensing	Nov 2024
Fermilab, Particle theory seminar	Mar 2024
University of Chicago, Particle theory seminar	Mar 2024
Stanford, Institute for Theoretical Physics seminar	Mar 2024
UC Berkeley, 4D seminar	Feb 2024
Erice, Quantum Technologies for Fundamental Physics workshop	Sep 2023
CERN, Long-Lived Particles Workshop 12	Nov 2022
CERN, Feebly Interacting Particles Conference	Sep 2022
University of Oxford, Dalitz Seminar	Jun 2022
Instituto Superior Técnico, Lisbon, Extreme Plasma Physics seminar	Sep 2021
European Physical Society, HEP conference	Jul 2021
University of Oxford, Atomic and Laser Physics seminar	Jun 2020
University of Oxford, Dalitz Seminar	Oct 2019

OUTREACH & PUBLIC SERVICE

Lecturer in Mathematics at San Quentin Prison	2025
Prison Literature Project	2024 – present
QuarkNet	2024
◦ I give talks on my work to Bay Area high school students interested in pursuing higher education in physics	
Student Mentor with IntoUniversity	2018 – 2020
◦ Mentored school students to improve university access for those from underrepresented backgrounds, with a focus on young people with an interest in physics.	
Community Links mentorship	2018
◦ Co-founded a program working with young women to develop skills in documentary production, and to enable employment through film production more broadly.	