KASRA AMINI

PERSONAL INFORMATION

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EDUCATION

Habilitation, Freie Universität Berlin, Germany
4 February 2022 – Present
Habilitation conducted in the physics department.

D.Phil, University of Oxford, UK
17 January 2014 – 23 August 2017

Thesis submitted: 21 April 2017.
Viva examination: 16 August 2017 with 5 minor spelling corrections.
D.Phil completion: 23 August 2017.
Total time from start of research to submission: 3 years 3 months

D.Phil in Physical and Theoretical Chemistry (Doctoral Training Account, University of Oxford scholarship) under the supervision of Prof. Mark Brouard, winning a **rare commendation** from Mathematics & Physical Life Sciences (MPLS) division on the excellent quality of DPhil work and *viva* exam. D.Phil Thesis: "*Studies of Ultrafast Molecular Photofragmentation and Dynamics Using Fast Imaging Sensors"*

MSci, University College London, UK
30 September 2008 – 12 September 2012

MSci in Chemistry with Mathematics Joint Honours (1st Class Honours). Master thesis was under the supervision of Prof. Stephen Price. Master's thesis: "*New ions and new chemical reactions: electron ionization of propene*"

WORK EXPERIENCE

Head of ERC Starting Grant group, Max-Born-Institut (Berlin, Germany) 01 March 2025 - Present
Group leader of ERC Starting Grant group on time- and energy-resolved electron scattering (TERES), official supervisor of two PhD students, postdoctoral researchers, and many masters students. International collaborations with MeV UED facilities, keV UED research groups, and commercial companies. Our group is capable of performing RF-compressed UED with THz electron streaking in the gas-phase and solid-state thin films. Student supervision affiliation to the physics department of Freie Universität Berlin.

Junior Group leader, Max-Born-Institut (Berlin, Germany) 01 March 2021 – 29 February 2025
Junior group leader of newly-established ultrafast electron diffraction (UED) group with €345,000 start-up package. Lead the planning, design, simulation, purchase, and building of keV-UED set-up at MBI. Official supervisor of a PhD student which I hired on 1 April 2021 (former doctoral student of Prof. Dwayne Miller's UED group). Preparing multiple research grant proposals for keV-UED studies as sole principal investigator (PI). Created several new close collaborations with top experts (B. Siwick, D. Miller, J. Luiten, DrXWorks, P. Weber, A. Kirrander, M. Centurion, D. Rolles, M. Meyer, T. Jahnke, SLAC MeV UED facility). Main editor of RSC book on X-ray and electron scattering. PI of EU-XFEL beamtime (Mar 2023) on time-resolved Coulomb explosion imaging studies of isomerization. Participant in Leibniz Leadership Academy 2021-2022 for junior group leaders (competitive selection), and recognised as *J. Phys. B* Emerging Leader. *We are the first group to perform high repetition rate UED with direct electron detection, and we are the first group to perform RF-laser synchronization to <30-fs at high repetition rate using RF electron compression. With the MeV-UED team at SLAC, we captured the first transient cis structure of azobenzene isomerization.*

Research fellow, ICFO (Barcelona, Spain) 01 October 2019 – 28 February 2021
Research fellow in Attoscience and Ultrafast Optics under the supervision of Prof. J. Biegert (ICFO) on the laser-induced electron diffraction (LIED) project. This is a senior scientist role usually given to candidates with 5+ years of postdoctoral experience. I prepared grant application and supervised students in research activities, coupled with university teaching and writing book chapters/articles.

Postdoctoral researcher, ICFO (Barcelona, Spain) 27 September 2017 – 30 September 2019
Postdoctoral researcher in Attoscience and Ultrafast Optics under the supervision of Prof. J. Biegert (ICFO) on the laser-induced electron diffraction (LIED) project. Supervised students, managed measurements and prepared high-impact manuscripts.

Postdoctoral research associate, University of Oxford (UK) 01 May 2017 – 01 August 2017
Postdoctoral research associate under the supervision of Prof. Mark Brouard (University of Oxford) and Prof. Daniel Rolles (Kansas State University), working on time-resolved UV-pump XUV-probe studies of molecular dynamics using the FLASH free-electron laser.

Undergraduate lab teacher, University of Oxford, UK 30 September 2012 – 30 September 2016
Supervised undergraduate students in their laboratory practical experiments. I taught students to devise a systematic, logical plan of approach towards their undergraduate experiments. Students were motivated to critique, rationalize and interpret their obtained results. Courseworks and examinations were assessed.

PUBLICATIONS (h-index = 18; i10-index = 22; total citations = 1260); *authors contributed equally

1) K. Amini *et al.*, *Rev. Sci. Instrum.* **86**, 103113 (2015).
2) J. D. Pickering *et al.*, *J. Chem. Phys.* ***144****, 161105* (2016).
3) E. Savelyev *et al.*, *New J. Phys.* **19**, 043009 (2017).
4) K. Amini *et al.*, *J. Chem. Phys.* **147**, 013933 (2017).
5) U. Ablikim *et al.*, *Phys. Chem. Chem. Phys.* **19**, 13419 (2017).
6) M. Burt *et al.*, *Phys. Rev. A* **96**, 043415 (2017).
7) K. Amini*, E. Savelyev* *et al.*, *Struct. Dyn.* **5**, 014301 (2018).
8) M. Burt*, K. Amini* *et al.*, *J. Chem. Phys.* **148**, 091102 (2018).
9) F. Braußе *et al.*, *Phys. Rev. A* **97**, 043429 (2018).
10) K. Amini*, M. Sclafani*, T. Steinle* *et al.*, *Proc. Natl. Acad. Sci. U. S. A. (PNAS)* **116**, 8173 (2019*)*.
11) F. Allum *et al.*, *J. Chem. Phys.* **149**, 204313 (2018).
12) X. Liu, K. Amini *et al.*, *J. Chem. Phys.* **151**, 024306 (2019). *Corresponding author.*
13) K. Amini *et al.*, *Review on Progress in Physics* **82**, 116001 (2019).
14) K. Ueda *et al.*, *J. Phys. B* **52**, 171001 (2019).
15) B. Belsa, K. Amini *et al., Struct. Dyn.* **8**, 014301 (2021).
16) A. Sanchez*, K. Amini* *et al.*, *Nat. Commun.* **12**, 1520 (2021).
17) K. Amini *et al.*, *Eur. Phys. J. D* **75**, 275 (2021).
18) F. Allum *et al.*, *Faraday Discussions* **228**, 161 (2021).
19) X. Liu, K. Amini *et al.*, *Nature Comm. Chem.* **4**, 1-7 (2021).
20) M. Shaikh*, X. Liu*, K. Amini* *et al.*, *Rev. Sci. Instrum.* **92**, 104103 (2021).
21) H. Köckert *et al.*, *J. Phys. B* **55**, 014001 (2022).
22) A. Sanchez *et al.*, *Optica* **12**, 1729 (2023).
23) F. Rodriguez Diaz, M. Mero, K. Amini*, *Struct. Dyn.* **11**, 054302 (2024). **Corresponding author.*
24) A. Ryabov, K. Amini*, *APL Photonics* (*Submitted for review*). *Corresponding author.*
25) K. Amini*, B. Siwick, J. Franssen, T. de Raadt, J. Luiten, A. Ryabov, *PRL* (*Submitted for review*). *Corresponding author.
26) K. Cheung, …, M. Brouard*, K. Amini*, *J. Phys. B* (*Submitted for review*). *Corresponding authors.
27) S. Kumar, …, D. Xiang*, K. Amini*, *Science* (*Under preparation*). *Corresponding authors
28) R. Tabarie, M. S. Schuurman, K. Amini*, *J. Phys. B* (*Under preparation*). *Corr. author.
29) S. Bhattacharyya *et al.*, *Science* (under preparation).

BOOKS AND BOOK CHAPTERS

1) K. Amini *et al.*, *Adv. At. Mol. Opt. Phys.* **69**, 163–231 (2020).
2) K. Amini *et al.*, "Structural Dynamics with X-ray and Electron Scattering" (*RSC books*, 2023).

INVITED TALKS

- 2024 – Dream Chemistry Lecture, Polish Academy of Sciences (Invited lecture).
- 2024 – Lund University, Physics Department (Seminar).
- 2024 – Max-Planck-Institut für Kernphysik (Boethe colloquium).
- 2024 – SLAC National Accelerator Laboratory (Seminar).
- 2023 – Max-Planck-Institut für Kernphysik (Boethe colloquium).
- 2023 – 12th Internat. Meeting on Atomic and Molecular Physics and Chemistry (Talk).
- 2022 – University of Oxford, department of chemistry (Seminar).
- 2022 – Freie Universität Berlin, department of physics (Colloquium, Habilitation talk).
- 2020 – COST Action Attosecond workshop (Talk, online).
- 2018 – American Chemistry Society 256th meeting: Ahmed Zewail Symposium (Talk).

GRANTS

15 July 2024 — ERC Starting Grant 2024 awarded (€2,492,679; 5 years) titled "Complete Characterization of Photochemical Reactions by Time- and Energy-Resolved Electron Scattering" under acronym TERES. Start date of grant: 1 March 2025.

30 January 2024	DFG Individual Grant 2024 (€500,000; 3 years) titled "Ultrafast electron diffraction imaging of chemical substitution effects on nonadiabatic nuclear dynamics at conical intersections". Under review.
16 November 2022	DFG Individual Grant 2023 application (€500,000; 3 years) titled "Ultrafast Electron Diffraction Imaging of Transient Nuclear Dynamics With 50-fs Resolution". Deemed fundable but not ranked high enough (limited funds). Unsuccessful.
16 November 2021	DFG Emmy Noether Grant 2021 (€2,020,000; 6 years) titled "A New Tool In Photochemistry: Combining Inelastic And Elastic Electron Scattering To Completely Characterize Photochemical Reactions". Unsuccessful but with recommendation to re-submit for a shorter three-year DFG Individual Grant.
15 August 2019	The Sir John Templeton Foundation grant (€942,353; 3 years) titled "The Influence of Quantum Interferences and Entanglement on Chemical Reactivity**"**. Co-leader of this project with Prof. Dr. Jens Biegert to study the electron-nuclei quantum interference and quantum entanglement using strong-field laser physics. Unsuccessful.
30 June 2019	George H. Endress postdoctoral fellowship (€110,000; 3 years) between University of Freiburg (Prof. Giuseppe Sansone) and University of Basel (Prof. Stefan Willitsch), which included a competitive research proposal. Declined (09/ 2019).
12 February 2019	Marie Curie Individual Fellowship Standard Grant 2018 (€165,000; 2 years). Achieved 92.2/100 evaluation for *Marie Curie Individual Fellowship Standard Grant 2018* (€165,000) under the supervision of Prof. Dr. Francesca Calegari which was below the MC-IF-CHE 92.8 cut-off threshold. I was placed on the reserve waiting list. I also gained a "Seal of Excellence" for this proposal.

TEACHING AND SUPERVISION EXPERIENCE

Lecturer, Freie Universität Berlin, Germany 14 April 2023 – 20 July 2023
Lecturer in the Advanced Atomic and Molecular Physics Master's course of the Master's degree in Physics, with 4 teaching hours per week over ~12 weeks (~48 hours total) and ~20 students enrolled in the course.

Lecturer, Universitat Politècnica de Catalunya, Spain 19 February 2018 – 26 February 2021
Lecturer in the Ultrafast and Ultraintense Laser Light Master's course of the Master's degree in Photonics, teaching fundamental principles of ultrafast laser physics (femtosecond pulse generation and propagation, dispersion, spatial and temporal chirp, nonlinearities) and applications of attoscience and ultrafast laser technology, as well as disseminating and communicating current research results from DPhil, postdoctoral research at ICFO, and wider field. Lectured for three academic years, for ~4 hours per week.

Private tutor, Freelance 30 September 2008 – Present
Private in-person and online tutor teaching chemistry, physics and biology to GCSE/A-Level/IB level. Typically teach a few students on a weekly basis, teaching students not only the knowledge required but also the skills (e.g. independent learning, problem-solving) to be successful in academia. I have helped students gain admission to Oxford University, Cambridge University, Imperial College London, Bristol University and Westminster private school. I have been an online tutor with Keystone tutors since Apr 2014.

Physics tutor, Oxford Summer Courses, UK 01 June 2017 – 30 August 2017
Physics tutor teaching various undergraduate level topics in physics (e.g. classical and quantum mechanics, special and general relativity, particle physics, ultrafast laser physics) with my own devised syllabus. D.Phil femtosecond research results were also communicated.

Currently *supervising* 1 Ph.D and 1 visiting Masters students in my group at MBI (since March 2021). I have *supervised* in total of 1 Postdoctoral researcher, 5 Ph.D students, 6 Masters students, and 2 visiting Ph.D students (2013-present). I also *mentored* ten 1st year undergraduates at UCL (2010-2011).

ACADEMIC DISTINCTIONS

- Recognised as an Emerging Leader in the field of AMO physics by J. Phys. B (2020).
- Awarded a rare commendation by the MPLS division of University of Oxford on the excellent quality of PhD thesis, viva examination and research output (2017).
- Awarded "Sealed of Excellence" by the ERC for a Marie Curie grant application (2018).
- Awarded the Young Scientist Bursary award for European XFEL User's meeting (2019).

STUDENT AND STAFF SUPERVISION

- Official supervisor of Fernando Antonio Rodriguez Diaz (04/2021 – 09/2024, PhD), Athira Mini Santhosh (05/2025 – Present, PhD), Sudhir Kumar Janghu (03/2025 – Present, MSc project), Jyothsna Varghese (04/2025 – Present, MSc project), Simone Stahl (10/2025 – Present, MSc project) with affiliation to physics department of Freie Universität Berlin. Supervised 7 Master's interns previously.

- Official supervisor of two postdoctorate researchers, Dr. Andrey Ryabov (06/2024 – 01/2025), formerly of Prof. Baum's group, and Dr. Joanne Woodhouse (05/2025 – Present).
- Co-supervised 4 PhD students and 3 Masters students since the second half of my PhD (2015 – 2021).