

KEVIN THIEME

Postdoctoral Researcher in Experimental Astroparticle Physics

ADDRESS: University of Oxford, Department of Physics WEBSITES: physics.ox.ac.uk/our-people/thieme
Denys Wilkinson Building (Office 504A) wolfson.ox.ac.uk/person/kevin-thieme
Keble Road, Oxford, OX1 3RH, UK ORCID: [0000-0003-3954-7612](https://orcid.org/0000-0003-3954-7612)
EMAIL: kevin.thieme@physics.ox.ac.uk CITIZENSHIP: German

POSTDOCTORAL APPOINTMENTS

APR. 2025–TODAY **Research Assistant**, UNIVERSITY OF OXFORD, DEPARTMENT OF PHYSICS, UK
Supervisors: KIMBERLY PALLADINO, HANS KRAUS
Junior Research Fellow, WOLFSON COLLEGE, Oxford, UK (since Jan. 2026)
Collaborations: LUX-ZEPLIN (LZ), XLZD and MIGDAL

JAN. 2022–APR. 2025 **Research Fellow/Associate**, UNIVERSITY OF HAWAI‘I AT MĀNOA, DEPARTMENT OF PHYSICS AND ASTRONOMY, USA
Supervisor: JELENA MARICIC
Associated Member, EUROPEAN ORGANIZATION FOR NUCLEAR RESEARCH (CERN), Neutrino Platform, CH (host institute)
Supervisor: HANGUO WANG (UCLA)
Collaboration: DarkSide-20k – Co-leading WBS with GUILLAUME PLANTE (COLUMBIA)

EDUCATION

NOV. 2017–DEC. 2021 **Dr. sc. nat.**, UNIVERSITY OF ZURICH, DEPARTMENT OF PHYSICS, CH
PhD thesis: *The Low-Energy and Large-Scale Frontier of Dual-Phase Xenon Time Projection Chambers for Dark Matter Search*
(awarded on 29 Jul. 2022 with distinction, Faculty of Science)
Advisor and committee chair: LAURA BAUDIS
Committee: PATRICIA SÁNCHEZ-LUCAS, MARC SCHUMANN, NICOLA SERRA
Collaboration: DARWIN

SEP. 2015–JUN. 2017 **MSc. ETH Physics**, ETH ZURICH, DEPARTMENT OF PHYSICS, CH
Master thesis: *Null Lagrangians and Noether’s theorem for non-local field theories*
Advisors: NIKLAS BEISERT, DANIELE ORITI, ALEXANDER KEGELES

SEP. 2012–SEP. 2015 **BSc. ETH Physics**, ETH ZURICH, DEPARTMENT OF PHYSICS, CH
Semester thesis: *Vibration measurement at the PSI nEDM-experiment*
Advisors: KLAUS STEFAN KIRCH, SYBILLE KOMPOSCH, JOCHEN KREMPEL

JUN. 2012 **University entrance diploma**, GYMNASIUM COSWIG, GER
(with distinction, Saxon Minister of Education)

RESEARCH STAYS

APR. 2023–MAR. 2025 INFN LABORATORI NAZIONALI DEL GRAN SASSO (LNGS), IT (2 months total)

JAN. 2020 InvisiblesPlus Secondment at COLUMBIA UNIVERSITY IN THE CITY OF NEW YORK, DEPARTMENT OF PHYSICS, USA (ELENA APRILE’s group)

SEP. 2016–APR. 2017 Master project at MAX PLANCK INSTITUTE FOR GRAVITATIONAL PHYSICS (AEI POTSDAM), GER (Division Quantum Gravity and Unified Theories, group for Microscopic Quantum Structure and Dynamics of Spacetime)

FEB. 2015–JUN. 2015 Semester project at PAUL SCHERRER INSTITUTE (PSI), CH (Division Research with Neutrons and Muons, group for Ultra Cold Neutron Physics)

RESEARCH EXPERIENCE

POSTDOCTORAL PROJECTS

2. Postdoc: Within a UK pre-construction project, I lead the technical development of the field cage for the next-generation rare-event observatory [XLZD](#), designed to deploy a 60 t to 80 t liquid xenon target. I coordinate the work of four engineers at Oxford and collaborate closely with international partners.

FIELD CAGE DEVELOPMENT FOR XLZD

- Mechanical design and testing of novel field cage and TPC concepts, including initiated research into fibre-composite material structures with thin-film electrodes
- Electrostatic design and simulations
- Radiogenic background estimation and material selection

I also conduct a high-energy electronic recoil analysis of [LZ](#) data and I commission the data acquisition software for the [MIGDAL](#) experiment at the Rutherford Appleton Laboratory (RAL).

1. Postdoc: I contributed substantially to the development of the [DarkSide-20k](#) dark matter detector. I was deputy manager of the Underground Argon Cryogenics System, designed to serve a total inventory of 100 t of low-radioactivity argon, and contributed to the design and simulation of the DarkSide-20k inner detector and its prototype.

UNDERGROUND ARGON CRYOGENICS OF DARKSIDE-20K

- Team lead for the installation and benchmarking of the cryogenics system at LNGS
- Major involvement in the commissioning of the cryogenics system (RE37) at CERN
- Contributions to system design and integration: operating modes, functional logic, piping & instrumentation diagram, subsystem integration into the facility

INNER DETECTOR OF DARKSIDE-20K

- Responsible for gas pocket formation and monitoring system for DarkSide-20k TPC and its mock-up detector
- Conceived and conducted flow and thermal modelling of the argon volume in the DarkSide-20k TPC

At CERN, I contributed to R&D on a PEN-based wavelength shifting reflector and to ProtoDUNE-HD (NP04).

DOCTORAL PROJECTS

I investigated low-energy particle interactions in liquid xenon and conducted detector and photosensor R&D towards the next-generation dark matter observatory [DARWIN](#). I was responsible for a substantial part of the design and installation of the cryogenics, gas handling and storage systems of the 2.6 m tall dual-phase xenon TPC [XENOSCOPE](#) containing 350 kg of xenon.

VERTICAL DARWIN DEMONSTRATOR XENOSCOPE

- Key contributor to design and installation
- Leading role in the successful commissioning phase and the first run
- Invented a horizontal levelling system (registered German utility model: [DE 20 2021 101 412 U1](#))

MICROPHYSICS MEASUREMENTS AT LOW ENERGIES AND NOVEL PHOTODETECTORS

- Operation of the first dual-phase xenon TPC with SiPMs and characterisation with low-energy sources
- Measurement of the mean electronic excitation energy of liquid xenon (W-value) and xenon scintillation and ionisation yields at low-energy
- Development and implementation of an efficient raw-data processing framework for a dual-phase xenon TPC
- Gaseous ^{37}Ar source production in collaboration with the Laboratory for Radiochemistry at SINQ (PSI)
- Optical simulations and search for external double photoelectron emission in SiPMs

TEACHING AND SUPERVISION EXPERIENCE

- Teaching assistant for courses on experimental physics I – IV for physics majors (4 semesters at Zurich)
- Demonstrator for laboratory courses for physics and medicine majors (2 semesters at Zurich, 1 term at Oxford)
- Co-Advisor for:
 - PhD students: P. SALOMONE (SAPIENZA U. ROME) at LNGS, V. GOICOECHEA CASANUEVA (U. HAWAI'I), NOAH ROWE (U. OXFORD)
 - Master students: N. SCHERMER (TU MUNICH) at Zurich, P. SALOMONE (SAPIENZA U. ROME) at CERN, T. WONG (U. OXFORD)
 - Bachelor/undergraduate students: S. HOCHREIN (U. ZURICH), A. KING and J. STILLER (WILLIAMS COLLEGE) at LNGS, B. KAVANAGH and L. HABGOOD (U. OXFORD), K. MCKENNA (U. MANCHESTER) at Oxford

CONFERENCES, WORKSHOPS AND SEMINARS

- 21–22 OCT. 2025: UK HEP FORUM 2025: “WANDERING IN THE DARK”, Participant, Abingdon, UK
8–12 JULY 2024: IDM 2024, [Poster](#), L'Aquila, IT
23–26 MAY 2022: XESAT2022, [Talk](#), University of Coimbra, PT
1 FEB. 2022: XENON/DARWIN SCIENCE CLUB, *A Measurement of the Mean Electronic Excitation Energy of Liquid Xenon*, online
8 OCT. 2021: INPA SEMINAR (LBNL Berkeley), [Talk](#), invited, online
12–23 JUL. 2021: ICRC 2021, [Talk](#), online, proceedings: [PoS\(ICRC2021\)](#)
28–30 AUG. 2019: LIDINE 2019, [Talk](#), University of Manchester, UK
26–30 AUG. 2019: SPS-ÖPG ANNUAL MEETING, [Talk](#), University of Zurich, CH
10–17 JUL. 2019: EPS-HEP2019, [Talk](#), ICC & Ghent University, BE
9–11 JAN. 2019: ZPW2019, A NEW LOOK AT DARK MATTER, Participant, University of Zurich, CH
21–22 JUN. 2018: SENSE TECHFORUM, Poster: *Characterization of SiPMs for Use in Liquid Xenon Time Projection Chambers*, University of Geneva, CH

OUTREACH

- Event lead for the successful [DARK MATTER DAY 2025](#) at the University of Oxford, organising flash talks, a poster session, particle physics demonstrations, and children's science activities for an audience of over 100 members of the public.
- Public talk and lab tour at the largest Swiss Science Festival SCIENTIFICA 2021.

IT SKILLS

- PROGRAMMING: C/C++ (proficient), Python (proficient), LabVIEW (competent)
ANALYSIS: ROOT (proficient)
SIMULATION: ANSYS Fluent/Maxwell (expert), COMSOL Multiphysics AC/DC Module (proficient), GEANT4 (advanced beginner)
CAD: SolidWorks (expert)
TYPESETTING: LaTeX (proficient)

LANGUAGES

ENGLISH: Fluent GERMAN: Mother tongue FRENCH: Basic knowledge

MISCELLANEOUS

- Referee for European Physical Journal C and Journal of Instrumentation
- Soaring since 2008 (Glider Pilot License in 2010) & Tea Sommelier (Berlin Tea Academy Certificate 2024)