



Universität Hamburg
DER FORSCHUNG | DER LEHRE | DER BILDUNG

CLUSTER OF EXCELLENCE
QUANTUM UNIVERSE



Géraldine Servant
20 February 2025

Best Poster and Best Paper Award Ceremony

Beate Naroska Award Ceremony: 22nd April 2025



- **Awardees 2024:**
Ursula Bassler (senior guest professorship)
Azadeh Maleknejad (junior guest professorship)
- **Date:** 22nd April 2025, 16:00 – 18:00h
- **Location:** DESY auditorium / hybrid format
- **Registration:**
<https://indico.desy.de/event/48194/>



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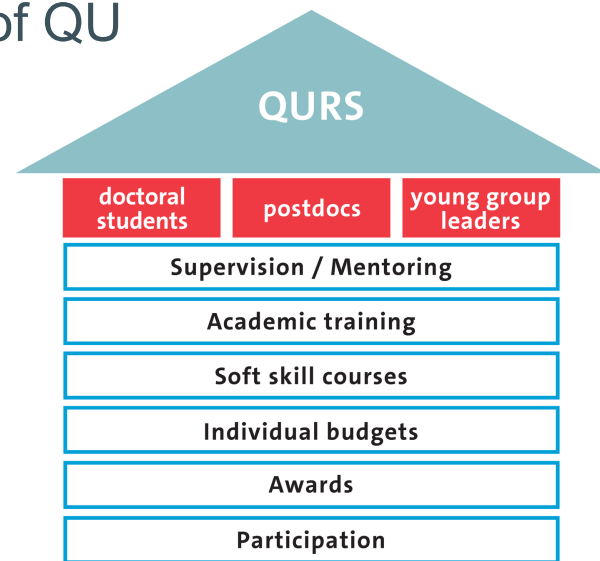
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Best Poster Award

QU Best Poster Award: idea

- Promotion of early career scientists is a key goal of QU
- Once per year at the QURS Days early career researchers are invited for a poster session instead of topical parallel sessions
- Decision by public vote after the session
- Awardee will receive a certificate and a personal prize money of 100 euros



QU Best Poster Award: contributions

- 15 posters were presented today

QU Best Poster Award: results

- third most votes (7) for

Tom Krokotsch – Pushing the Boundaries of High Frequency
Gravitational Wave Detection

QU Best Poster Award: results

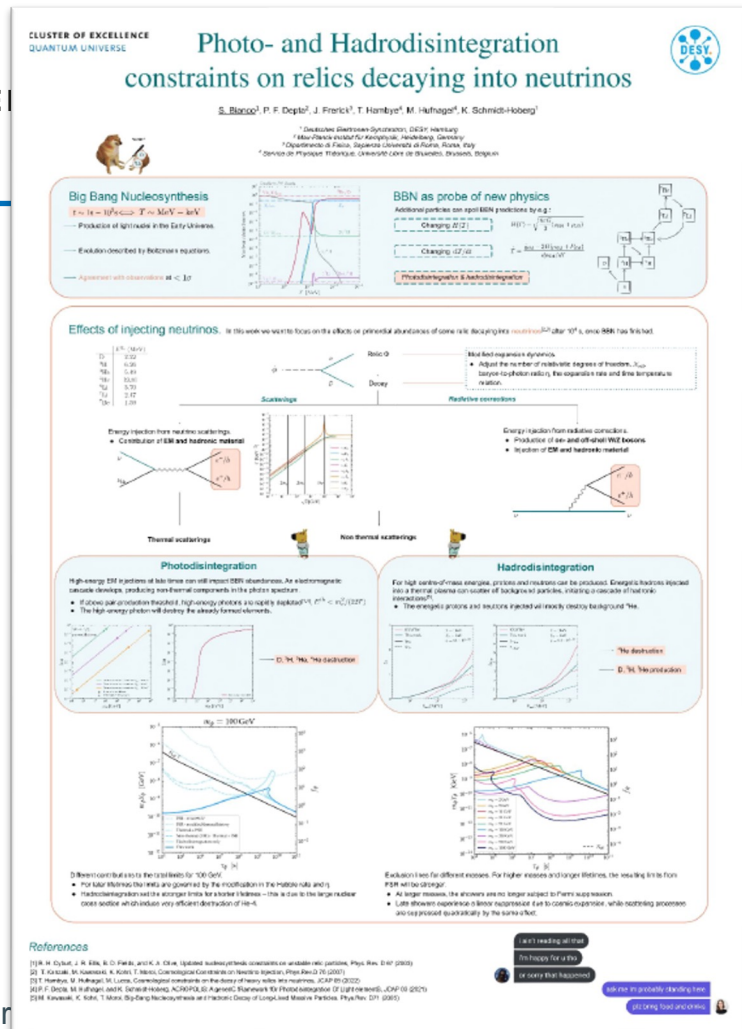
- second most votes (10) for

Martina Cataldi – Leptogenesis via Bubble Collisions

QU Best Poster Award: results

- and the winner is (15 votes) ...

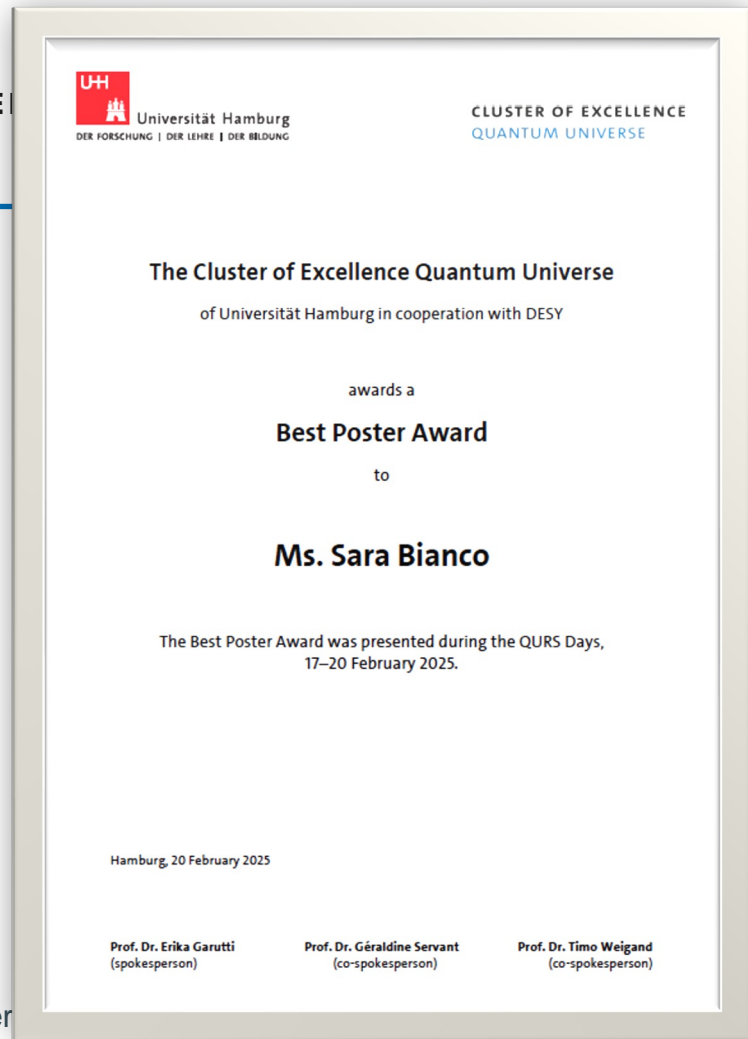
Sara Bianco – Photo- and Hadrodisintegration constraints on relics decaying into neutrinos



QU Best Poster Award: results

- and the winner is (15 votes) ...

Sara Bianco –
Photo- and Hadrodisintegration
constraints on relics decaying
into neutrinos





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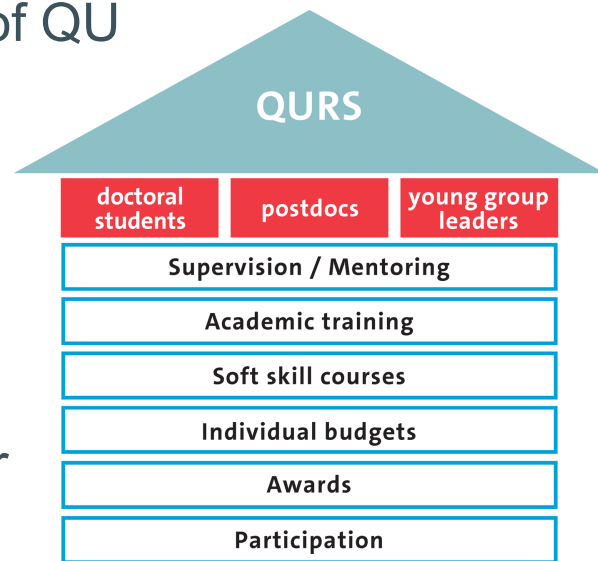
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Best Paper Awards

QU Best Paper Award: idea

- Promotion of early career scientists is a key goal of QU
- QU annually awards best paper awards (PhD awards exist in departments and at DESY)
- Highlights contributions of young scientists to cluster research activities
- 3 PhD students, 3 postdocs, 1 young group leader



QU Best Paper Award: criteria

- Selection committee of Quantum Universe members: L. Lucie-Smith, C. Schwanenberger, K. Schmidt-Hoberg, G. Servant, and A. Westphal
- Selection criteria:
 - scientific quality of the paper
 - impact of the paper
 - significant contribution by the awarded young researcher
 - independence of the awarded young researcher

QU Best Paper Award: criteria

- Boundary conditions:
 - scientific paper related to Quantum Universe
 - scientist from UHH or DESY (alumni included)
 - research work done during Hamburg affiliation
 - published within the last 2 calendar years (arXiv or journal)
 - self-nominations are allowed
- Please nominate your excellent female colleagues!

QU Best Paper Award: prize

- The awarded scientists will receive:
 - a certificate
 - a personal prize money of 100 euros
 - a research budget of 1000 euros
- Expected to write a research highlight on the awarded paper:
<https://www.qu.uni-hamburg.de/research/highlights.html>
- All further nominations also invited to write a research highlight text



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Awardees



The Cluster of Excellence Quantum Universe

of Universität Hamburg in cooperation with DESY

awards a

Best Paper Award

to

Ms. Valentina Guglielmi

for the paper

CMS Collaboration, "Reweighting simulated events using machine-learning techniques in the CMS experiment", arXiv:2411.03023 [hep-ex].

The paper represents a significant step forward in high-energy physics sustainability through deployment of machine learning methods in simulation, which will be in particular of great importance for the future analyses of prospective data collected during the High-Luminosity run of the Large Hadron Collider at CERN.

Hamburg, 20 February 2025

Prof. Dr. Erika Garutti
(spokesperson)

Prof. Dr. Géraldine Servant
(co-spokesperson)

Prof. Dr. Timo Weigand
(co-spokesperson)



The Cluster of Excellence Quantum Universe

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awards a

Best Paper Award

to

Dr. Jonathan Kley

for the paper

R. Bedi, T. Gherghetta, C. Grojean, G. Guedes, J. Kley, and P. N. H. Vuong,
"Small instanton-induced flavor invariants and the axion potential",
Journal of High Energy Physics 2024, 156.

Dr. Kley has developed tools, inherited from invariant rings, to estimate small instanton effects in the axion potential and he explicitly computed the shift of the potential minimum induced by higher-dimension flavorful CP-violating interactions among quarks.

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awards a

Best Paper Award

to

Ms. Anna-Malin Lemke

for the paper

E. C. Gardiner, L. Z. Kelley, A.-M. Lemke, and A. Mitridate,
“Beyond the Background: Gravitational-wave Anisotropy and Continuous Waves
from Supermassive Black Hole Binaries”, *Astrophysical Journal* 965 (2024) 164.

The paper demonstrates how the results of gravitational wave anisotropies and supermassive
Black Hole binaries searches can be used to break degeneracies between supermassive Black
Hole binaries population parameters that are present in inference analyses solely based on
the spectral properties of the anisotropies.

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Best Paper Award

to

Dr. Florent Baume

for the paper

F. Baume & J. Calderón-Infante, "On higher-spin points and infinite distances in conformal manifolds", *Journal of High Energy Physics* 2023, 163.

This work in conformal field theory proves part of the CFT distance conjecture, thereby obtaining novel constraints on the general structure of the space of theories related by exactly marginal deformations.

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Best Paper Award

to

Dr. Andrea Cardini

for the paper

The CMS Collaboration, "Search for bottom quark associated production of the standard model Higgs boson in final states with leptons in proton-proton collisions at $\sqrt{s} = 13$ TeV", Physics Letters B 860 (2025) 139173.

Dr. Cardini is awarded for designing and driving the complete analysis enabling the first search for bbH at the LHC, achieving a limit of 3.7 times the Standard Model and showing that there is no showstopper to observe bbH with more luminosity.

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Best Paper Award

to

Dr. Anna Hallin

for the paper

J. Birk, A. Hallin, and G. Kasieczka, "OmniJet- α : the first cross-task foundation model for particle physics", Machine Learning: Science and Technology 5 (2024) 035031.

The paper demonstrates transfer learning towards foundation models in particle physics with the OmniJet- α architecture. Dr. Hallin is awarded for her leadership of the nascent foundation model effort of the Cluster of Excellence Quantum Universe.

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Best Paper Award

to

Dr. Craig Lawrie

for the paper

C. Lawrie, X. Yu, and H. Y. Zhang, "Intermediate defect groups, polarization pairs, and noninvertible duality defects", Physical Review D 109 (2024) 026005.

Dr. Lawrie is awarded for his significant contribution to the understanding of higher-form non-invertible generalized symmetries and their interplay with defects in quantum gauge theories.

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Thanks for your attention!

**Please nominate further
excellent papers in the next call!**

