[vcq-student] Reminder: VCQ Colloquium Talk by Mario Krenn on 24th March

vcq-student-request@list.tuwien.ac.at on behalf of
Hilmar, Nadine <nadine.hilmar@tuwien.ac.at>

Mon 3/24/2025 8:07 AM

To:vcq-student@list.tuwien.ac.at <vcq-student@list.tuwien.ac.at>; vcq.postdoc@list.tuwien.ac.at <vcq.postdoc@list.tuwien.ac.at>; PIs <vcq@lists.univie.ac.at>;

REMINDER! VCQ COLLOQUIUM TODAY!

VCQ Colloquium Talk by Mario Krenn on 24 March 2025

We are glad to present

Mario Krenn
Max Planck Institute for the Science of Light

Monday, 24 March 2025
At **Atominstitut:** Helmut Rauch lecture hall
Stadionalle 2, 1020 Vienna

Towards an Artificial Muse for new ideas in Physics

Artificial intelligence (AI) is a potentially disruptive tool for physics and science in general. One crucial question is how this technology can contribute at a conceptual level to help acquire new scientific understanding or inspire new surprising ideas. I will talk about how AI can be used as an artificial muse in physics, which suggests surprising and unconventional ideas and techniques that the human scientist can interpret, understand and generalize to its fullest potential [1]. I will focus on AI for the design of new physics experiments, in the realm of quantum-optics [2, 3] and quantum-enhanced gravitational wave detectors [4] as well as super-resolution microscopy [5]. Finally I will discuss how algorithms with access to millions of scientific papers can predict and suggest future ideas for scientists [6,7].

[1] Krenn, Pollice, Guo, Aldeghi, Cervera-Lierta, Friederich, Gomes, Häse, Jinich, Nigam, Yao, Aspuru-Guzik, On scientific understanding with artificial intelligence. Nature Reviews Physics 4, 761 (2022).

[2] Krenn, Kottmann, Tischler, Aspuru-Guzik, Conceptual understanding through efficient automated design of quantum optical experiments. Physical Review X 11(3), 031044 (2021).

[3] Ruiz-Gonzalez, Arlt, et al., Digital Discovery of 100 diverse Quantum Experiments with PyTheus, Quantum 7, 1204 (2023).

[4] Krenn, Drori, Adhikari, Digital Discovery of interferometric Gravitational Wave Detectors, in press: Phys. Rev. X (2025), (https://arxiv.org/abs/2312.04258)

[5] Rodríguez, Arlt, Möckl, Krenn, Automated discovery of experimental designs in super-resolution microscopy with XLuminA, Nature Comm. 15, 10658 (2024)

[6] Krenn et al., Forecasting the future of artificial intelligence with machine learning-based link prediction in an exponentially growing knowledge network, Nature Machine Intelligence 5, 1326 (2023)

[7] Gu, Krenn, Interesting Scientific Idea Generation Using Knowledge Graphs and LLMs: Evaluations with 100 Research Group Leaders. arXiv:2405.17044 (2024)

17:00 Get-together with snacks
17:30 VCQ Student talk by Antonin Jaros on Sensing Spin Systems with a Transmission Electron Microscope
VCQ Colloquium Talk
17:45

Host: Philipp Haslinger
For further information please visit https://vcq-quantum.at/colloquium-ss-2025/
Please use the link bellow, in order to attend this event on zoom:
https://tuwien.zoom.us/j/64971556023?pwd=WaB4Gl7BPkfJqV0broabAIz3xoXMFO.1
The lecture series is organized by the Vienna Center for Quantum Science and Technology (VCQ).
We are looking forward to seeing you there!
All the best from the VCQ team

Save the date for the next VCQ Colloquia: https://vcq-quantum.at/colloquium-ss-2025/

07.04.2025	**Alexey Gorshkov**	University of Maryland
19.05.2025	**Hannes Bernien**	University of Innsbruck

https://vcq-quantum.at/