Univ.-Prof. Dr. Mario Krenn
Excellence Cluster *Machine Learning for Science*
Artificial Scientist Lab

University of Tübingen
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http://mariokrenn.wordpress.com/
Current Group Website at MPL

Our group builds artificial intelligence systems for
discovering new concepts, experiments and ideas in physics.

To accelerate this effort, we need your help!

We have

several fully-funded open PhD and Post-Doc positions (m/f/d)

in our group -- which just moved from the Max Planck Institute in Erlangen to the **University of Tübingen**, one of *Europe's most vibrant hub for artificial intelligence* research.

A list of concrete potential projects:

- Development of **modern auto-differentiation (JAX-based) physics simulators** for the discovery of new physics experiments (example here)
- **AI-driven discovery** of hardware for some of the most thought after **quantum information** technology, quantum-enhanced **microscopes and telescopes** (example here), and AI-driven discovery of **new physics experiments to test quantum-gravity** and observe **gravitational waves** (examples here and here)
- **Inventing state-of-the-art AI-driven exploration, optimization, and search algorithms** in extremely complex and enormously large spaces motivated by physics and chemistry
- Developing **interpretable AI for scientific discovery** in physics (example here)
- **Formal mathematics** (using Lean's mathlib) for Automated Discovery in Physics
- Agentic frameworks (e.g. LLMs with tool-use) for **closed-loop idea generation** for physics (example here)

Other projects are certainly possible too. In general, we believe that building autonomous scientific systems is not just a technical question, but requires understanding and insights from the **philosophy of science** – see e.g. here.

If you are excited to use artificial intelligence techniques for scientific discoveries in physics, send us your Application, including a CV, a short explanation of your motivation, the names and contact of two potential references to **mario.krenn@mpl.mpg.de**. **The opening will remain valid until the position is filled.**

28.05.2025

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The positions are funded via the Cluster of Excellence (Machine Learning for Science), the ERC Starting Grant ArtDisQ and the University of Tübingen. Salary will be determined according to the German collective wage agreement in public service (E 13 TV-L). The University aims to increase the proportion of women in research and teaching and therefore urges suitable qualified women scientists to apply. Qualified international researchers are expressly invited to apply. Disabled candidates will be given preference over other equally qualified applicants. The university is committed to equal opportunities and diversity. It therefore takes individual situations into account and asks for relevant information. The employment will be handled by the central administration of the University of Tübingen.

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