Max-Planck-Institut für Kernphysik

Max Planck Institute for Nuclear Physics

The Max Planck Institute for Nuclear Physics (www.mpi-hd.mpg.de) is one of 86 research institutes of the Max Planck Society for the Advancement of Science e.V. (MPG). The MPG is an independent, non-profit research organization, which seeks to promote basic research in the service of the general public.

The Quantum Dynamics and Control Division (Director: Prof. Dr. Thomas Pfeifer) at the Max Planck Institute for Nuclear Physics in Heidelberg (Germany) offers

PhD, Postdoc, and Group-Leader positions (m/f/d)

We have openings for each of these options, and are offering you a one-of-a-kind environment to explore, expand, and realize your science idea.

Who are we looking for:

- Are you fascinated by the physics of matter interacting with lasers?
- Do you care about and know some fundamentals of atomic, molecular, and optical physics (AMO)
- Are you curious and adventurous?

From fundamental quantum dynamics in atoms and molecules, optical neural networks for ultrafast quantum computers to pushing molecular biology or diagnostics forward by using "bright light":
Pick one of these topics here or below, or bring up your own physics idea that you are most excited about, and we can, together, develop an experimental/conceptual project or research area tailored for you, which you can move and expand into the future.

Besides this **Open Call (shaping your own research)**, we also offer specific opportunities in …

… Attosecond Science and Intense-Laser Physics:
Multiple projects with ultrafast and high-repetition rate lasers (~100 kHz) experiments or high-intensity modification of fundamental processes employing Reaction Microscopes and/or multidimensional spectroscopy methods. We also routinely conduct experiments at Free-Electron Lasers, with beam time at various facilities throughout the world.
Kaldun et al. Science 354, 738 (2016), Schmidt et al. PRL 122, 073001 (2019), Ott et al. PRL 123, 163201 (2019), Shobeiry et al. arXiv:2110.06668 (2022)

… Fundamental Interactions of Cold Atoms with Intense Lasers
We study laser-cooled, trapped atoms and stored molecules and their dynamics in intense femtosecond pulses towards new ways of imaging and steering quantum matter on short time scales.
Kurz et al., Rev. Sci. Instrum. 92, 123202 (2021)

… Dual-Comb Quantum Control from Atoms to Photonic Circuits
Here, we take our experience with fundamental interactions in isolated systems to a new level: Cooperating with materials-focused experimental groups at Heidelberg university, we aim at laser control and big-data analysis of complex systems from quantum dots to electronic quantum materials and photonic crystals, biomolecules as well as hybrid mixtures of these systems.

The position will be filled at the earliest convenience.

The salary will be paid according to the collective agreement for civil service employees in Germany (TVöD).

The Max Planck Society is an equal opportunity employer actively seeking to increase diversity and to create an inclusive environment within its research activities. We celebrate diversity and do not discriminate based on race, religion, national origin, gender, sexual orientation, age, disability status, or any other applicable characteristics protected by law. The Max Planck Institute for Nuclear Physics is a family-friendly employer.

Further information can be obtained by sending an email to: thomas.pfeifer@mpi-hd.mpg.de

Applicants are encouraged to send a curriculum vitae and a motivation letter (a short half-page summary of what you would like to do, and why), reflecting your passion for physics (also include a figure, if helpful).

Applications should be uploaded **ONLINE** with reference #12-2022.

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