Postdoctoral Position — supported by the Ferenc Krausz Fellowship

Ultrafast field-resolved infrared spectroscopy with enhanced detection

Description:

In a joint effort, the Max Planck Institute of Quantum Optics, the Ludwig Maximilian University Munich and the Center for Molecular Fingerprinting Research (CMF) combine cutting-edge femtosecond laser technologies [1-3] with novel electric-field level techniques [4-6] to advance a new type of mid-infrared spectroscopy. The unique systems are developed and utilized by a highly interdisciplinary team of physicists, data scientists, biologists and clinical personal to identify, via minuscule variations in the infrared response of human blood samples, medical conditions such as cancer.

The successful candidate will work with an international team to develop next-generation spectroscopy instruments based on bright, coherent, broadband infrared sources and field-resolved detection. The goal for this position is to implement novel nonlinear techniques to boost the detection limit to the next level. The duration of the position is initially 2 years, with the possibility of extension. The place of work will be at the LAP in Garching, near Munich (Germany).

The position is supported by the Ferenc Krausz Fellowship—one of Max Planck Society's Nobel Laureate Fellowships awarded to outstanding postdocs. These offer junior scientists a unique insight into the research of the Nobel laureates at the Max Planck Institutes. In addition, the selected postdocs will also profit from the outstanding national and international networks for furthering their careers.

Qualifications and Skills:

- Excellent PhD in physics or a related discipline
- Experience with ultrafast lasers and nonlinear optics
- Experience with infrared and/or nonlinear spectroscopy is a plus
- Strong self-motivation and the ability to solve problems independently
- Professional English proficiency

We offer:

- Stimulating projects with many learning opportunities
- Supportive, multi-disciplinary and highly motivated team
- Access to the latest optical technologies and state-of-the-art laboratories
- Excellent research and working conditions for building your research career

Please send a brief cover letter explaining your interest in the position, your CV and contact information of two references.

For questions and applications, please contact Dr. Kafai Mak: kafai.mak@mpq.mpg.de

[1] N. Nagl et al., Opt. Lett. 44, 2390 (2019).
[2] P. Steinleitner, N. Nagl, M. Kowalczyk et al., Nat. Photon., 16, 512 (2022).
[3] M. Kowalczyk, N. Nagl, P. Steinleitner et al., Optica, doi 10.1364/OPTICA.481673
[4] I. Pupeza et al., Nature Photon. 9, 721 (2015).
[5] I. Pupeza et al., Nature 577, 52 (2020).
[6] A. Weigel et al., Opt. Expr. 29, 20747 (2021)