

Laser interferometry on extremely short time and length scales

A main focus of our research is the analysis and control of light-induced many-body quantum mechanical wave packets in complex molecular systems represented by coherent superpositions of electronic states dressed by vibrational excitations [1]. The observed coherences on atomic length and timescales by means of advanced optical and coherent x-ray laser spectroscopy reveal rich information on the many-body quantum system including ultrafast decay and site-specific couplings [2]. A detailed knowledge of energy, charge, and information transport at the nanoscale is of great relevance for future applications, e.g. in radiotherapy or quantum technology. The summer student will be involved in related experimental activities.

[1] Science Advances 8, eabn6848 (2022)

[2] Struct. Dyn. 9, 064301 (2022)

Field

A4: Development of experimental techniques (methodology oriented)

DESY Place

Hamburg

DESY Division

FS

DESY Group

FS-PS-FCP

Special Qualifications:

Author: LAARMANN, Tim (FS-PS (FS-PS Fachgruppe FCP))