



LUDWIG-  
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UNIVERSITÄT  
MÜNCHEN



## MSc Position

At the Laboratory for Attosecond and High-Field Physics in the Division of Prof. Dr. Ferenc Krausz

### Achromatic Deep Nulling for Differential Molecular Fingerprinting

Our group focuses on the generation of broadband coherent mid-infrared radiation [1] and its application to spectroscopic techniques for biomedicine. All these techniques can greatly benefit from direct optical referencing to emphasize small concentration differences [2], to balance source noise [3], and to relax dynamic range requirements of detectors and digitization electronics [4]. The challenge of this thesis is to reach the fundamental limitations of an interferometric setup for broadband optical nulling.

#### Your tasks:

- Set up an interferometer with optimized extinction ratio
- Quantify fundamental limitations
- Test new concepts for achromatic deep nulling

#### Your qualifications:

- Highly motivated
- Strong academic record
- Basic knowledge in (nonlinear) optics

#### We offer:

- Dynamic and friendly work environment
- Experience with cutting-edge ultrafast laser technology

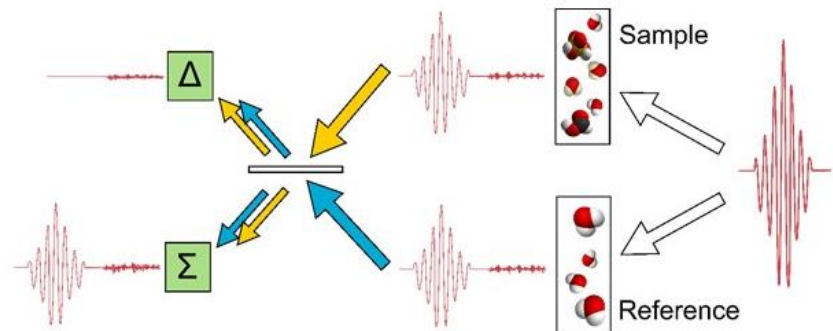
You are welcome to visit our labs!

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#### References:

[1] I. Pupeza et al., Nat. Phot. **9**, 721 (2015)

[2] H. Chandrasekhar et al., Opt. Commun. **17**, 1 (1976)

[3] J. Hayden et al., Appl. Phys. B **124**, 29 (2018)

[4] D. Kuehl et al., Analytical Chemistry **3**, 50 (1978)