MASTER THESIS

CENTRE FOR ADVANCED LASER APPLICATIONS / HIGH FIELDS (Garching)

To strengthen our experimental team at the Centre for Advanced Laser Applications (CALA) at the Forschungszentrum Garching near Munich we are currently looking for a talented and motivated

Master Student

In the framework of your thesis, you will be responsible for:

- Implementation of a bandpass filter in front of the wavefront sensor
- Analysis of how this affects the looping process of the deformable mirror
- Characterization of the laser focus using HDR imaging

Furthermore, you will be given the chance to participate in beamtimes, getting hands-on experience in operating the experimental device controls and diagnostics.

Vivid interest in laser particle acceleration, optics and laser physics is beneficial. Knowledge in programming with Python is desirable. Enjoyment of experimental work is major prerequisite.

If we caught your attention, we would be happy to receive your application including a short cover letter, your transcript of records and your CV to the email address listed below. You are always very welcome to visit us in Garching for a lab tour. We are excited to meet you!

Contact Data:

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Laser-driven Heavy Ion Acceleration

Laser-driven ion acceleration has been an emerging research field since its first realization about two decades ago. The ion bunches, accelerated by the interaction of ultra-intense laser pulses with plasmas, exhibit unique features, promising applications in various fields of physics.

Our group aims at the development of laser-driven bunches of *heavy* ions (gold, lead, thorium) as preparation for a novel reaction mechanism ('fission-fusion') in order to generate extremely neutron-rich isotopes relevant for nuclear astrophysics.

The acceleration efficiency is strongly influenced by the minimal spot size that the laser can be focused to. For this, the wavefront of the incoming pulse needs to be flat. This is done using a wavefront sensor. It can then forward this information to a deformable mirror which can account for aberrations in the wavefront introduced by uneven mirror surfaces etc.

CALA

The Centre for Advanced Laser Applications is home to one of the world's most powerful laser systems, the ATLAS-3000 laser, with a maximum power of up to 3 PW, delivered in ultra short pulses of 25 fs.