

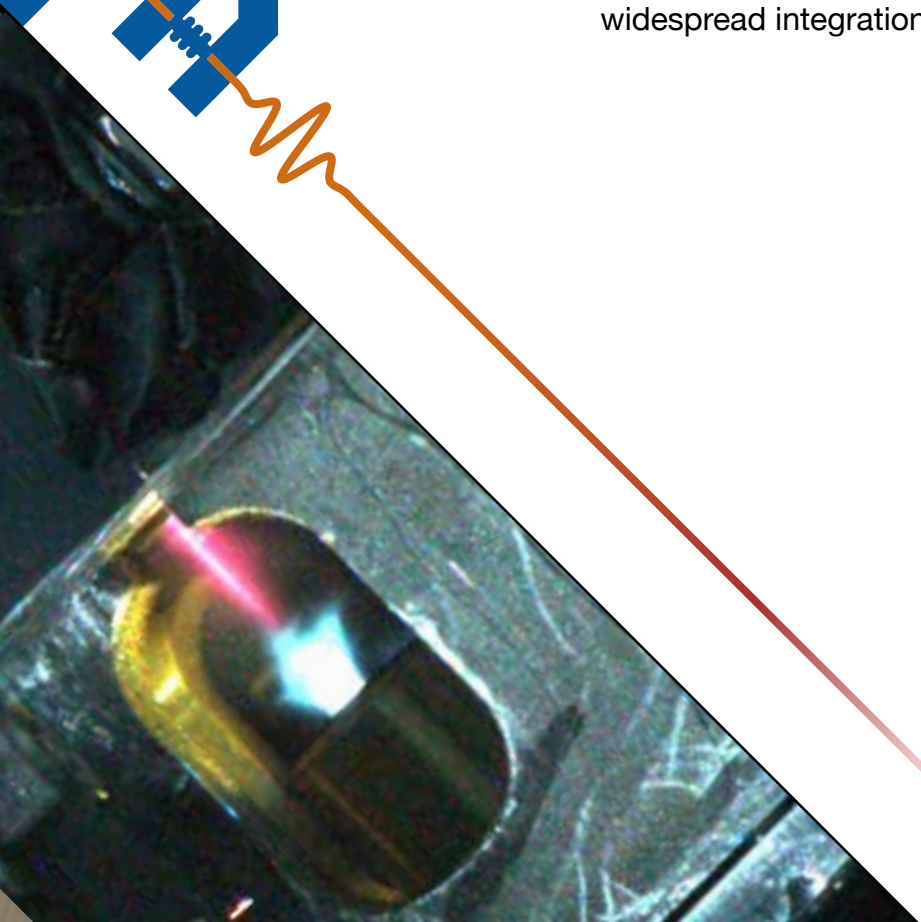


LMU | CALA Ultra-Intense Seminar on  
FRIDAY, October 23 at 15:00 CEST

# Dr. Matthew Streeter

## **Automation and optimisation of laser wakefield accelerators**

In this seminar, I will present results from an automated laser driven plasma wakefield experiment. By building automation into many elements of the experimental design, we were able to form a closed loop containing the experimental controls and diagnostics. An algorithm was then used to control inputs to the experiment, take shots, analyse the generated data, and make decisions on how to optimise the generated electron and x-ray beams. Using Bayesian Optimisation, up to 6 dimensions were optimised simultaneously, providing a highly efficient and „low effort“ method of making the accelerator ready for applications. Adopting this approach provides a way to optimise complex laser plasma interactions, where non-linear plasma effects make a priori predictions highly challenging. It can also help to make plasma accelerators sufficiently robust for widespread integration in user facilities.



This event is part of the *LPA Online Seminars* on Lasers, Plasmas and Accelerators. Learn more on [lpa-seminars.com](http://lpa-seminars.com)