

**Dr. Robert Boge – ELI Beamlines**

**Joule-class thin-disk multipass amplifier development at ELI Beamlines**

ELI Beamlines is a leading laser research facility dedicated to providing unique research opportunities to the international scientific community for laser driven x-ray and particle acceleration experiments. While we focus on providing beam time to experimental stations for users, we also dedicate significant effort toward developing laser technology in-house. Our lasers, some of the most advanced and powerful systems in the world, are either built here or developed in strong collaboration with external partners.

In this presentation, I will first give an overview of the ELI Beamlines facility and our four lasers. Then I will discuss the L1 Allegra laser, a 1 kHz, 100 mJ, 15 fs OPCPA system, in more detail. Finally, I will present my work on a Yb-doped Joule class thin-disk multipass amplifier, which will pump the last stage of OPCPA and bring the laser to its final operational performance

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# Robert Boge

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## PERSONAL DETAILS

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Birthdate: 20.01.1987

Nationality: German and French

## EDUCATION

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**Swiss Federal Institute of Technology (ETHZ), Zurich, Switzerland** 11.2010 – 10.2014  
*Ultrafast Laser Physics Group, Professor U. Keller*  
Ph.D., Physics

**University of Massachusetts Amherst, Amherst, MA, USA** 09.2009 – 09.2010  
*Nano-spectroscopy Research Group, Professor M. Achermann*  
Master of Science, Physics

**Ruprecht-Karls-Universität Heidelberg, Heidelberg, Germany** 09.2006 – 08.2009  
*Major in Physics*  
Vordiplom

**Sankt-Ansgar-Schule, Hamburg, Germany** 09.1997 – 08.2006  
*Intensive courses: Mathematics and Physics*  
Trimester abroad: Marseille, France (Fall 2002) and London, England (Fall 2003)  
Abitur

## PROFESSIONAL EXPERIENCE

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**ELI Beamlines, Prague, Czech Republic** 02.2015 – present  
*Laser Scientist*

- Development of thin-disk multipass amplifier
- Construction of L1 ALLEGRA beamline (picosecond OPCPA: 15 fs / 100 mJ / 1 kHz / 800 nm)
- Responsible for design and implementation of beamline diagnostics
- Responsible for commissioning of thin-disk pump lasers, their compression stages, and SHG
- Coordination with control team, designers, and workshop
- Main author for patent on cavity stabilization
- Publication in peer reviewed journals and presentation of results at conferences

**Swiss Federal Institute of Technology Zurich (ETHZ) Zurich, Switzerland** 11.2010 – 10.2014  
*Ph.D. Student and Research Assistant,*

- Research on attosecond phenomena in strong-field and XUV single-photon ionization by means of reaction microscopy
- Writing of software for measurement automation, data reconstruction and analysis, and for semi-classical Monte-Carlo simulations
- Publication in peer reviewed journals and presentation of results at conferences
- Supervision of semester students and graduate students tutoring

## SKILLS

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Experience: Ultrafast laser systems, thin-disk amplifiers, pulse diagnostics, non-linear optics, detector physics, vacuum, and electronics

Software: MATLAB, C++, LabVIEW, Inventor, Zemax

Language: German, English, French