

# FELs of Europe Topical Workshop on Selected Problems in FEL Physics: from soft X-rays to THz

Wed Nov 15<sup>th</sup>

Guided Tour of FLASH2 Tunnel and Experimental Hall. Please meet at 9 a.m. at the FLASH FEL hall, seminar room Bld. 28c / Rm. 201. **For further information and division of groups see:** <https://indico.desy.de/event/38682/page/4656-guided-tour-2>

## Session 1: Soft X-rays - Electron Beam Dynamics

**Chairs: Marc Guetg and Mikhail Krasilnikov**

- **12:50 – 13:00** Welcome and Introduction – **Gianluca Geloni** (European XFEL)
- **13:00 - 13:20** Recent advancements in measurement of slice energy spread at EU-XFEL – **Stuart Walker** (DESY)
- **13:20 - 13:40** Dynamics of eSASE spikes in undulators – **Romain Ganter** (PSI)
- **13:40 - 14:00** Laser heater commissioning at FLASH – **Philipp Amstutz** (DESY)
- **14:00 - 14:45** Discussion

## Session 2: Soft X-rays - FEL Schemes: Theory

**Chairs: Francesca Curbis and Evgeny Schneidmiller**

- **14:45-15:05** FERMI FEL2-upgrade with EEHG+HGHG scheme – **Carlo Spezzani** (Elettra)
- **15:05-15:25** EEHG seeding scheme at SwissFEL Athos FEL – **Romain Ganter** (PSI)
- **15:25-15:45** FLASH2020+: seeding at high rep. rate – **Lucas Schaper** (DESY)
- **15:45 – 16:30** Discussion

**16:30 – 16:50** Coffee break

## Session 3 – Structured Light and Beam Manipulation

**Chairs: Gianluca Geloni and Marc Guetg**

- **16:50-17:10** Schemes for generating pulses with orbital angular momentum at the European XFEL – **Jiawei Yan** (European XFEL)
- **17:10-17:30** Fresh Slice with Dechirper, - **Weilun Qin** (DESY)
- **17:30-18:15** Discussion

**Thu Nov 16<sup>th</sup>**

## Session 4: Soft X-ray and THz Schemes

**Chairs: Manfred Helm and Evgeny Schneidmiller**

- **8:30-8:50** Short period, high field undulator developments – **Marie-Emmanuelle Couprie** (SOLEIL)
- **8:50-9:10** The ASPECT project at the European XFEL – **Victor Hariton** (DESY)
- **9:10-9:30** Strongly tapered undulators for THz generation – **Pietro Musumeci** (UCLA)
- **9:30-9:50** The superradiant THz generation at XFEL (STERN) project at the European XFEL – **François Lémerly** (DESY)
- **9:50-10:35** Discussion

**10:35 – 10:55 Coffee break**

## Session 5: FEL Applications – I

**Chairs: Francesca Curbis and Gianluca Geloni**

- **10:55 - 11:15** Time-resolved chiral x-ray photoelectron spectroscopy with transiently enhanced atomic site-selectivity: A free electron laser investigation of electronically excited fenchone enantiomers – **Caterina Vozzi** (Politecnico Milano)
- **11:15 – 11:35** Challenges and users' wishes for coherent control experiments – **Carlo Callegari** (Elettra)
- **11:35 – 12:20** Discussion

**12:20-13:30 Lunch**

## Session 6: THz FEL schemes

**Chairs: Manfred Helm and Marie Kristin Czwalinna**

- **13:30 - 13:50** The THz FEL at PITZ – **Mikhail Krasilnikov** (PITZ, DESY)
- **13:50 - 14:10** Widely tunable electron bunch trains for the generation of high-power narrowband 1–10 THz radiation – **Lixin Yan** (Tsinghua University)
- **14:10 - 14:30** FEL physics of the planned THz facility DALI – **Ulf Lehnert** (HZDR)
- **14:30 – 14:50** The 2-Color Upgrade of the IR/THz FEL at the Fritz Haber Institute – **Wieland Schöllkopf** (FHI)
- **14:50 – 15:35** Discussion

**15:35-15:55 Coffee Break**

## Session 7: Soft X-rays - FEL schemes: experiments

**Chairs: Serguei Molodtsov and Gianluca Geloni**

- **15:55 - 16:15** FERMI FEL1 upgraded to user-oriented EEHG: commissioning and lessons learned – **Carlo Spezzani** (Elettra)
- **16:15 - 16:35** First operation of EEHG at FLASH – **Eugenio Ferrari** (DESY)
- **16:35-16:55** Attosecond at harmonics experiments at the European XFEL (also including more in general short pulse production at SASE3) – **Andrei Trebushinin** (European XFEL)
- **17:55-17:40** Discussion

**18:00-21:00 Dinner (at FLASH)**

# Fri Nov 17th

## Session 8: Diagnostics

**Chairs: Marie Kristin Czwalińska and Mikhail Krasilnikov**

- **8:30- 8:50** Photon temporal diagnostics dedicated to few fs to sub-fs resolution – **Jan Deinert** (HZDR)
- **8:50-9:10** A Versatile THz Source from High-Brightness Electron Beams: Generation and Characterization – **Enrica Chiadroni** (INFN)
- **9:10-9:30** Photon temporal diagnostics at the European XFEL – **Jia Liu** (European XFEL)
- **9:30-9:50** Studies of the longitudinal phase space of free-electron lasers with transverse deflecting structures – **Gesa Goetzke** (DESY)

**9:50- 10:20** Discussion

**10:20 – 10:35** Coffee break

## Session 9: FEL Applications – II

**Chairs: Francesca Curbis and Serguei Molodtsov**

- **10:35 – 10:55** Two-color (NIR/X-ray and X-ray/X-ray) experiments at the Small Quantum Systems (SQS) scientific instrument – **Michael Meyer** (European XFEL)
- **10:55 – 11:15** Photochemical Ring-Opening Reaction of 1,3-Cyclohexadiene: Identifying the True Reactive State – **Carlo Callegari** (Elettra)
- **11:15-11:45** Discussion

**11:45 – 12:10** Wrap up

**12:10 – 13:10** Lunch (lunch boxes offered)

**End of the workshop**