

Workshop: High Intensity Laser Matter Science at the HED Instrument at the European XFEL

5–6 April 2017
Schenefeld campus, Room E1.173



Tuesday, 4 April 2017		
16:00	Registration starts	
17:00	(European XFEL science seminar –presenter: Cindy Bolme from LANL) This seminar is not a part of the workshop, but open to everybody	
18:30	Welcome drink / aperitif	
Wednesday, 5 April 2017		
8:30	Registration	
9:00	Opening Session	
	Welcome / scope of the workshop	
9:15	HED instrument overview	Chair: Toma Toncian (HZDR)
9:15	Overview time plan, X-ray transport and properties, experimental chamber, x-ray techniques, diagnostics and detectors	Ulf Zastrau (XFEL.eu)
9:45	Pump-probe laser	Max Lederer (XFEL.eu)
10:00	Online timing tools, optical probes	Motoaki Nakatsutsumi (XFEL.eu)
10:15	Coffee / poster session	
10:35	High-intensity laser for the HED instrument	Chair: Motoaki Nakatsutsumi (XFEL.eu)
10:35	Few 100 TW laser – contribution from HiBEF user consortium	Toma Toncian (HZDR, Germany)
11:00	Discussion: instrument and lasers	
11:20	Short break	
11:30	Contribution talks: WDM	Chair: Alexander Pelka (HZDR)
11:30	“Exploring the physical properties of warm dense water by using Free-Electron-Laser”	Philipp Sperling (XFEL.eu)
11:50	“Exploring the Microphysics of Extreme Plasma Conditions with X-ray Lasers”	Paulo Alves (SLAC, USA)
12:10	“Isentropic measurements in the warm dense matter regime using the European XFEL”	Colin Brown (AWE, UK)
12:30	Lunch / poster session	
14:00	Contribution talks: WDM, Relativistic laser-matter interaction	Chair: Ulf Zastrau (XFEL.eu)
14:00	“Non-equilibrium solid-to-plasma transition dynamics using XANES diagnostic”	Fabien Dorchies (CELIA, France)
14:20	“Time-resolved ionization dynamics in solid density plasmas”	Oswald Willi (U. Düsseldorf, Germany)
14:40	“Theory for time resolved temperature measurements using x-ray scattering”	Jan Vorberger (HZDR, Germany)
15:00	“XFEL Probing of Relativistic Plasmas Generated by fs Laser Pulses - Laser & Target Requirements”	Josefine Metzkes (HZDR, Germany)
15:13	“SAXS on ultrashort laser pulse experiments”	Thomas Kluge (HZDR, Germany)
15:26	“Heating, Ionization and Magnetic Instability in Short Pulse High Power Laser-Solid Target Interactions”	Lingen Huang (HZDR, Germany)

15:40	Coffee / poster session	
16:10	Contribution talks: Relativistic laser-matter interaction, activities in other facilities	Chair: Sebastian Göde (XFEL.eu)
	“XFEL experiments exploiting nonlinear processes in relativistic laser plasmas”	Christian Rödel (U. Jena, Germany)
	“Laser absorption in nano-structured plasma target: ultra-high energy density”	Alexander Pukhov (U. Düsseldorf, Germany)
	“Characterizing surfaces and interfaces of excited matter by X-ray reflectometry”	Christian Gutt (U. Siegen, Germany)
	“Scientific and diagnostic synergies between XFEL & relativistic-transparent laser plasmas”	Juan Fernandez (LANL, USA)
	“Experimental platform for HED sciences using high-intensity optical lasers at the SACLA XFEL facility”	Toshinori Yabuuchi (SACLA, Japan)
17:30	Discussion	
18:30	Reception and dinner at the XFEL campus / poster session	
Thursday, 6 April 2017		
9:00	Contribution talks: Relativistic laser-matter interaction	Chair: Mikako Makita (XFEL.eu)
9:00	“Relativistic electron transport in transient warm dense matter”	Paul McKenna (U. Strathclyde, UK)
9:20	“Optically-generated discharge fields for magnetized high-energy-density physics and for particle micro-lensing”	Joao Santos (CELIA, France)
9:40	“X-ray scattering and diffraction from samples driven by ultra-intense lasers: examples and lessons learned from LCLS and SACLA”	Dominik Kraus (HZDR, Germany)
10:00	Coffee / poster session	
10:30	Contribution talks: Relativistic laser-matter interaction	Chair: Thomas Cowan (HZDR)
10:30	“X-ray polarimetry of high-intensity laser-driven phenomena”	Hans-Peter Schlenvoigt (HZDR, Germany)
10:50	“Light-by-Light Scattering”	Thomas Heinzl (U. Plymouth, UK)
11:10	“Pair-production and Compton Scattering in Bi-chromatic Intense Laser and X-ray Pulses”	Daniel Seipt (U. Lancaster, UK)
11:30	“Gamma-ray emission enhanced by direct laser acceleration in a laser-driven MT-level magnetic field”	Alex Arefiev (U. Texas, USA)
11:50	Discussion	
12:30	Lunch / poster session	
14:00	Round table: day-1 requirements and paths for future	Toma Toncian (HZDR, Germany) Motoaki Nakatsutsumi (XFEL.eu)
	<ul style="list-style-type: none"> • X-ray properties and diagnostics, • Lasers operation modes, • Laser plasma diagnostics (non X-ray), • High-repetition sample delivery • Other issues 	
15:30	Coffee / experimental hall tour / poster session	
17:30	Final conclusion, remarks	Toma Toncian (HZDR, Germany) Motoaki Nakatsutsumi (XFEL.eu)
19:00	Dinner (self payer)	

Poster contributions

	Name		Institution	Title
1	Andreev	Alexander	MBI	Amplification of atto-pulses in laser plasmas
2	Kasim	Muhammad	University of Oxford	Single shot spatially resolved plasma wakefield diagnostic
3	Lancia	Livia	LULI, CNRS	Sprint-LULI interest for experiments at XFEL
4	Metzkes	Josefine	HZDR	XFEL probing of relativistic plasmas generated by fs laser pulses
5	Volpe	Luca	CLPU	Laser-driven X-ray sources for WDM studies at CLPU
6	Palmer	Charlotte	Lancaster University	Dynamics within high density plasmas
7	Ma	Yong	Lancaster University	Generation of femtosecond gamma-ray bursts stimulated by laser-driven hosing evolution
8	Gao	Zhipeng	Institute of fluid physics, CAEP	The phase transition of the lead free ferroelectric under shock compression
9	Pelka	Alexander	HZDR	Studying astrophysical processes by combining laser-driven plasmas with pulsed magnetic fields at HED
10	Rohatsch	Katja	HZDR	Resolving dynamic properties of warm dense matter with X-rays
11	He	Yong	Institute of Fluid Physics, CAEP	A 0.1 Hz, 30 T split-pair pulsed magnet system, conceptual design and primary test
12	Marx-Glowna	Berit	University of Jena	High purity x-ray polarimeter
13	Marrero Samarin	Guillermo	Queen's University of Belfast	Experimental Probing of QED Effects in Current and Prospective High-Power Laser Facilities
14	Molodtsova	Maria	HZDR	Development of an active bremsstrahlung detector for laser-plasma experiments
15	Laso Garcia	Alejandro	HZDR	Measurement of EMP generated with short pulse lasers and their effects on experimental equipment
16	Ferrari	Anna	HZDR	Radiation shielding for the HED Science Instrument
17	Prencipe	Irene	HZDR	A target network for advanced laser light sources
18	Alexander	Neil	General Atomics	Target Mass Production for LCLS
19	Baetz	Carsten	HZDR	HIBEF contributions
20	Appel	Karen	European XFEL	X-ray beam transport and properties at the HED science instrument
21	Appleby	Graham	European XFEL	The European Cluster of Advanced Laser Light Sources
22	Makita	Mikako	European XFEL	fast sample scanner for the HED instrument
23	Sukharnikov	Konstantin	European XFEL	DAQ and control for the HED instrument
24	Thorpe	Ian	European XFEL	Main vacuum sample chamber for the HED instrument
25	Göde	Sebastian	European XFEL	X-ray detectors at the HED instrument
26	Pikuz	Sergey	JIHT, RAS, Russia	Radiation-dominated matter created and studied by ultra intense XFEL and relativistic laser plasma X-ray emission