SATELLITE WORKSHOP - Photon Science

DAC setup at the HED instrument of the European XFEL

Tuesday, 26 January 2016 — **Seminar Room 459, Bldg. 30b**

Over the last decade new technical developments in the field of static and dynamic diamond anvil cell (DAC) work has significantly increased the demand for very brilliant light sources to be able to conduct very fast diffraction and spectroscopy experiments. Although new detectors have made it possible to collect diffraction images at very brilliant 3rd generation sources, kHz repetition rates are at the limit of what can be achieved. A natural progression is now to conduct these demanding experiments at 4th generation sources such as the High Energy Density Instrument of the European XFEL, which holds the promise of revealing new and unprecedented understandings of the dynamics of materials. In July 2015 the senate of the Helmholtz Association decided to fully fund the Helmholtz International Beamline for Extreme Fields (HIBEF) consortium at the HED instrument of the European XFEL. Part of this funding is reserved for the design and construction of a dedicated setup to conduct dynamic high-pressure experiments, e.g. the dynamic DAC or the double-stage DAC. During this workshop different experimental approaches and their feasibility will be presented as well as discussions of proposed pilot experiments. Finally, we will outline the technical implementation plan for 2016 - 2017 with the goal of being prepared to conduct the first experiments at the beginning of 2018.

Organiser: Hanns-Peter Liermann

Contact: hanns-peter.liermann@desy.de

PROGRAMME

	Session 1: Science with the Dynamic Compression DAC and the dsDAC at the HED	H.-P. Liermann	DESY
13:00	Welcome	Christian Schroer Carsten Baehtz	DESY HIBEF
13:15	Introduction and scope of the workshop	H.-P. Liermann	DESY
13:30	Science with dynamic drive DACs	N.N.	
14:00	***Coffee break***		
14:15	Science with the double stage DAC	Z. Konopkova L. Dubrovinsky	DESY BGI
14:45	Fast physico-chemical transformations in DAC using pulsed laser heating and irradiation	A. Goncharov	GL
15:45	WDW science in the DAC	S. McWilliams	Uni. Of Edinburgh
16:15	Discussion: Science of first experiments for DAC at the HED instrument and technical requirements	H.-P. Liermann	DESY
16:45	***Coffee break***		
	Session 2: Conceptual Design of DAC at the HED	C. Baehtz	HIBEF
17:00	Status of the HED instrument at the Eur. XFEL	U. Zastrau K. Appel	XFEL
17:30	Conceptual design of the DAC at the HED	H.-P. Liermann	DESY
18:15	Discussion	C. Baehtz	HIBEF
19:00	***Off side dinner TBD***	(self-payer)	

Update: 18 January 2016