Contribution ID: **72** Type: **talk**

HDR spatio-temporal intensity mapping by single-shot optical probing

Monday, 25 September 2017 16:50 (20 minutes)

Today's Petawatt (PW) laser systems are able to focus high power pulses to a few µm spot, achieving intensities up to 10^22 W/cm^2. Precise knowledge of the spatial and temporal intensity profile becomes increasingly important for describing the physics under these extreme conditions.
We present a new concept for acquiring high dynamic range (HDR) information of the 2D spatial and temporal intensity distribution of a high power laser in focus. In contrast to established methods that are restricted to significantly reduced laser energy (i.e. focal imaging and 3rd order HDR autocorrelation), our method is able to perform on target at full laser energy. It relies on optical probing of the dynamically generated plasma at a nm-thin foil. By using a temporally chirped probe pulse in combination with image multiplexing, movies with currently around 200 fs temporal and 25 µm spatial resolution can be obtained in a single shot.

Primary author: Mr SPEICHER, Martin (LMU Munich)

Co-authors: Mr HAFFA, Daniel (LMU Munich); Mr RIDENTE, Enrico (LMU Munich); Mr HARTMANN, Jens (LMU Munich); Dr BIN, Jianhui (LMU Munich); Prof. SCHREIBER, Jörg (LMU Munich); Mr ALLINGER, Klaus (LMU Munich); Mr OSTERMAYR, Tobias (LMU München and MPI-Q)

Presenter: Mr SPEICHER, Martin (LMU Munich)

Session Classification: WG7_Parallel

Track Classification: WG7 - High Brightness Power Sources: from Laser Technology to Beam Drivers