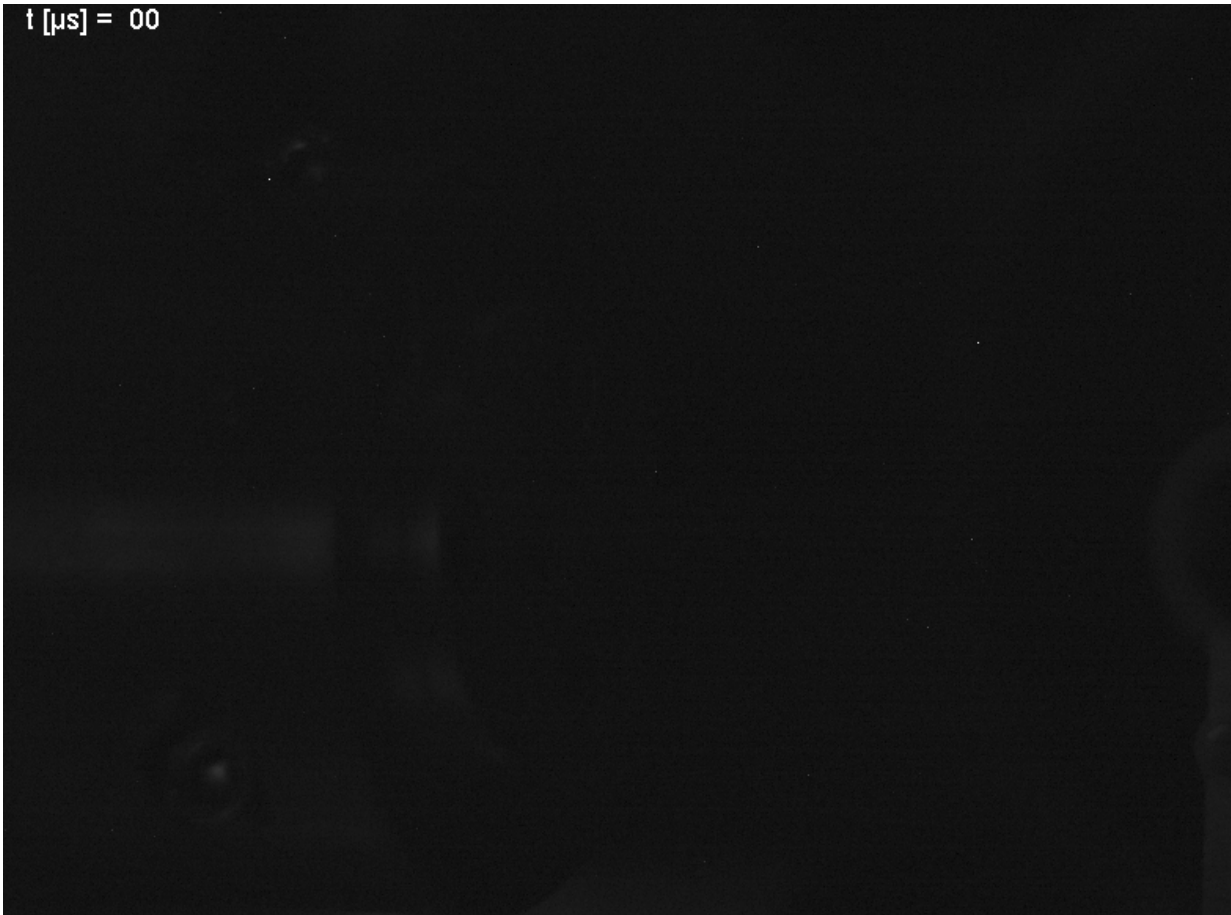


First user operation at FLASH2

April 19 2016



First user experiment at FLASH2: fluorescence of Xe clusters excited by the FLASH2 pulses. Left: Nozzle where the clusters exit. Middle: fluorescence in the focus of the multilayer mirror (higher intensity left and right of the centre, since there are more clusters which fluoresce). Right (weaker 'circles'): fluorescence of the clusters in the incoming unfocused FEL beam.

Since Friday, 8 April at 12:14 h FLASH is running in parallel operation for two user experiments, one in the experimental hall "Albert Einstein" (FLASH1) and one in the new hall "Kai Siegbahn" (FLASH2). First official FLASH2 users are the researchers around Sven Toleikis and Andreas Przystawik at beamline FL24 who focus the FLASH2 pulses with the help of a multilayer mirror onto rare gas clusters and study the fluorescence of the resulting nanoplasma as a function of cluster size.

Right after the successful start last Friday the first record for this doubled user operation was set: On Saturday, FLASH delivered 4000 pulses per second with up to 140 micro joule (μJ) per pulse to an experiment of Mark Dean et al. (Brookhaven National Laboratory, New York) at FLASH1 beamline PG1 and in parallel 110 pulses per second with about 100 micro joule each for FLASH2 making it a successful start at both ends.

The second free-electron laser line, FLASH2, has been realized from 2011 to 2015. Soon after the first successful generation of extremely intense FEL radiation on FLASH2 in August 2014, parallel operation of the two soft X-ray free-electron lasers, FLASH1 and FLASH2, has been established. Now, the first FEL beamline in the new hall "Kai Siegbahn" is operational making it possible to run two experiments simultaneously on FLASH1 and FLASH2, both delivering intense, ultra-short laser pulses with user-specific parameters.



FLASH is the first X-ray laser worldwide which can serve experiments at two beamlines at the same time.



View into FLASH's experimental hall 'Kai Siegbahn': beamline FL24 (right) has just taken up user operation while beamline FL26 (left) is still in the final equipment phase.

Provided by Helmholtz Association of German Research Centres

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