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X-Ray Movie Camera: A novel approach for time-resolved single-particle imaging

Tuesday, 18 September 2018 11:00 (15 minutes)

Coherent diffractive imaging (CDI) at X-ray free-electron lasers allows for resolving the structure [1] and light-induced dynamics [2] in individual nanostructures. We developed an experimental setup saving two consecutive images on spatially separated detectors, allowing to follow the evolution of the same individual, non-reproducible particle after irradiation with an intense FEL pulse. In this context, we also developed and commissioned a multilayer-mirror-based split-and-delay unit (SDU) at FLASH delivering XUV-double pulses up to 650 ps delay [3]. The concepts of the imaging setup and the SDU will be introduced and proof-of-principle results will be presented.

[1] Rep. Prog. Phys, 80(11), 115901 (2017).

[2] New J. Phys., 18(4), 043017 (2016), Nat. Phot. 10, 93 (2016), Phys. Rev. Lett. 108, 093401 (2012).

[3] J. Synch. Rad., accepted (2018).

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