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## A Combination of Harmonic Lasing Self-Seeded FEL with Two-Color Lasing

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The free-electron laser FLASH at DESY can produce SASE-FEL pulses in the extreme ultraviolet to the soft X-ray region. The flexibility of the variable gap undulators in the FLASH2 beamline opens a wide range of scientific opportunities. Different advanced lasing schemes have been tested in the past years, like the frequency doubler scheme, two-color lasing, and harmonic lasing self-seeded FEL (HLSS). A recent user experiment required parameters not yet provided: a similar power in the fundamental and the third harmonic. To fulfill these requirements, a new way of lasing had to be developed ad hoc. A combination of HLSS and two-color lasing has been identified as the appropriated scheme to deliver a tailored two-color beam to the user experiment. In this article we describe difficulties of the setup and discuss the results achieved.

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