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Commissioning of the new FLASHlab@PITZ beamline extension

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Over the past year a new beamline dedicated to R&D for electron FLASH cancer radiation therapy and radiation biology was set up at the Photo Injector Test facility at DESY in Zeuthen (PITZ). The beamline runs in parallel to the SASE THz beamline at PITZ and is connected to it with an achromatic dogleg. The dispersion within the dogleg is utilized to install an aperture to scrape off-energy dark current. The following straight section of the beamline contains a kicker system which will be capable of distributing electron bunches from a single bunch train freely over an area of 25mm x 25mm within one millisecond. So far, only the slow kicker for the vertical plane is installed –the fast kicker for the horizontal plane will be installed soon. Behind an exit window is an experimental area for conducting irradiation experiments with the 22 MeV electron beam, which can accommodate setups for a wide range of experiments.

Here we report first experimental results of the commissioning of the new beamline. The beam properties for a range of bunch charges are detailed; commissioning results of beamline components and first results generated at the new experimental area are described.

Footnotes

Paper preparation format

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