

11th Beam Telescopes and Test Beams Workshop



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FLASHlab@PITZ

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The Photo Injector Test facility at DESY in Zeuthen (PITZ) can provide unique beam parameters regarding delivered dose and dose rate. With an average dose rate of up to $1E7$ Gy/s and peak dose rates of up to $4E13$ Gy/s, PITZ is fully capable of ultra-high dose rate irradiation which should allow so-called FLASH radiation therapy, a new method of cancer treatment.

A completely new beamline exclusively for FLASH RT and biology experiments was built and is constantly being improved. One goal is to develop and test detectors which cover the whole range of dose rates available at PITZ. Additionally, there is the possibility for external users to test their detectors, bring their biological samples for irradiation and do joint experiments at PITZ!

Gafchromic films were used to measure beam parameters like beam profile, dose depth profile in water, homogeneity and dark current.

First tests of active detectors will be done using silicon sensors utilized in high energy physics experiments.

At low dose rates there will be a comparison with a commercially available ionization chamber.

Biological samples like DNA plasmid & cancer cells were irradiated in cooperation with TH Wildau and Charité Berlin. A possible difference between high and low dose rate irradiation will be investigated. Analysis is ongoing.

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