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## Experimental capabilities at the ARCTURUS laser laboratory - versatile development and diagnostics platform for advanced plasma-based accelerator experiments

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The experimental area at the ARCTURUS laser laboratory at Heinrich Heine University Düsseldorf (HHU) provides a versatile research and development platform, designed for supporting flexible configurations of advanced laser-driven and hybrid laser- and electron beam-driven plasma accelerator concepts, as well as offering a test-bed for novel diagnostic approaches.

The experimental setup has already enabled a series of laser-driven plasma accelerator experiments and has seen continuous additions and refinements in complementary diagnostics abilities.

We provide an overview of the currently implemented diagnostics and their prospective development paths, including online main laser monitoring before and after the laser-plasma interaction, probe laser plasma interferometry, various plasma wave shadowgraphy methods, spatial and spectrally resolved plasma-light metrology, electron and dose characterisation methods as well as secondary radiation monitors.

Future experiments at ARCTURUS laboratory are furthermore envisioned to be developed in a community-driven and collaborative approach.

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