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# Status report on the dielectric laser acceleration experiments at the SINBAD/ARES linac

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We report on the status of the dielectric laser acceleration (DLA) experiments at the SINBAD/ARES linac at DESY, Hamburg. The experiments are performed in the context of the Accelerator on a CHip International Program (ACHIP). At SINBAD, the main goal is to show net energy gain of externally injected relativistic electron bunches in the high-gradient fields of a laser-illuminated dielectric grating structure with a period of ~2 μm. This is enabled by the ultra-short bunches from the ARES linac, which were simulated to be on the order of single fs. In a later stage of the experiment, a laser modulator and permanent magnetic chicane will be added. Since both the modulator and the DLA will be driven by the same laser, phase-synchronous injection of trains of ~350 as FWHM long microbunches were simulated to be possible. Here, the current status of the first experimental area (EA1) at ARES is discussed, which was designed specifically for research on DLA and other dielectrics-based schemes. This includes the focusing lattice, electron beam diagnostics, the 2 μm laser beam line, the experimental chamber, as well as the microbunching setup.

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