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Controlling the transverse beam shape of the photoinjector laser via a spatial light modulator

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In order to achieve unprecedented control over the phase space of electron beams in linear accelerators, the laser pulse of the photoinjector can be shaped by spatial light modulators (SLMs). Here, we use a convolutional neural network (CNN) from a proof-of-principle test with a visible diode laser on the TiSa-800-nm photoinjector laser system of the Ferinfrarot Linac- und Test-Experiment (FLUTE) at KIT to compensate the effects of compression on the transverse laser profile.

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