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Shallow angle probing of beam driven wakes at the FACET II facility

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At the SLAC National Accelerator Laboratory we are focusing on probing particle driven wakes on both short (100s of ps) and long (100+ μ s) timescales utilizing the 10 GeV electron beamline at SLAC's FACET II facility. Plasma shapes on the short timescales have potential applications in future positron accelerators [1] and on long timescales studies into the relaxation time of the accelerator are important for determining maximum repetition rates of these accelerators; we plan to build on the work from Ref. [2] to further explore these limits and compare these results with findings from Ref. [3].

[1] T. Silva et. al. Phys. Rev. Lett. 127, 104801 (2021)

[2] R. Zgad Zaj et. al. Nat Commun 11, 4753 (2020)

[3] R. D'Arcy et. al. Nature 603 58-62 (2022)

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