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Development of an achromatic spectrometer for a laser-wakefield-accelerator experiment

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The large gradients of plasma-wakefield accelerators promise to shorten accelerators and reduce their financial and environmental costs. For such accelerators, a key challenge is the transport of beams with high divergence and energy spread. Achromatic optics is a potential solution that would allow staging of plasma accelerators without beam-quality degradation. For this, a nonlinear plasma lens is being developed within the SPARTA project. As a first application of this lens, we aim to implement an achromatic spectrometer for electron bunches produced by a laser-wakefield accelerator. We report on progress in designing such an experiment.

Primary author: PEÑA, Felipe (University of Oslo and Ludwig Maximilian University of Munich)

Co-authors: DROBNIAK, Pierre (University of Oslo); KALVIK, Daniel (University of Oslo); SJØBÆK, Kyrre Ness (University of Oslo); ADLI, Erik (University of Oslo, Norway); Dr LINDSTRØM, Carl A. (University of Oslo)

Presenter: PEÑA, Felipe (University of Oslo and Ludwig Maximilian University of Munich)

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