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Layout considerations for a future electron plasma research accelerator facility EuPRAXIA

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The Horizon 2020 Project EuPRAXIA (“European Plasma Research Accelerator with eXcellence In Applications”) is preparing a conceptual design for a highly compact and cost-effective European facility with multi-GeV electron beams using plasma as the acceleration medium. The design includes two user areas: one for FEL science and one for HEP detector development and other pilot applications. The accelerator facility will be based on a laser and/or a beam driven plasma acceleration approach.

This contribution discusses facility space considerations for future plasma accelerator facilities in the context of EuPRAXIA. It compares conventional and novel plasma accelerator facility requirements and presents potential layouts for the future site.

Together with performance analysis, cost effectiveness, and targeted user cases of the individual configurations, such layout studies will later enable a ranking of potential configurations. Based on this information the optimal combination of technologies will be defined for the 2019 conceptual design report of the EuPRAXIA facility.

Primary author: Dr WALKER, Paul Andreas (DESY)

Co-authors: Dr SPECKA, Arnd (LLR - Ecole Polytechnique - CNRS/IN2P3); MARCHETTI, Barbara (DESY); Mr KOCON, Dariusz (ELI-Beamlines); CHIADRONI, Enrica (LNF); Dr PRIBYL, Lukas (ELI Beamlines, IOP ASCR); FERRARIO, Massimo (LNF); Dr ASSMANN, Ralph (DESY); Dr BRINKMANN, Reinhard (DESY); Prof. WALCZAK, Roman (University of Oxford); Mr DORDA, Ulrich (DESY)

Presenter: Dr WALKER, Paul Andreas (DESY)

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