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A plasma-based accelerator beamline for ultra-low energy spread beams in the 1 GeV range

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A new multi-stage concept for plasma-based accelerators which could achieve unprecedented performance in terms of energy spread has recently been proposed. This concept considers splitting the acceleration process into two identical plasma stages joined by a magnetic chicane in which the beam chirp is inverted. So far, this concept has been explored in the context of the EuPRAXIA project for the production of 5 GeV beams. Here, we present an extension of this accelerating scheme towards the 1 GeV range, where the requirements on the laser system are less stringent and could be realized with current technology.

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