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Muon beams with plasma accelerators: challenges and applications

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We discuss generation and acceleration of muon beams in the 500 GeV - 1 TeV energy range via staged plasma accelerators, in view of a relevant example concerning geological investigations, with request on beam intensity and phase space quality very adapt to a pilot experiment with a hybrid plasma accelerator à la EupraXia@LNF. Unlike muon beams for muon colliders, the applications foreseen in the geo-science sector are much less demanding in terms of beam performances, making it an ideal opportunity for compact plasma accelerators, with sizes and costs significantly smaller than conventional ones for the energy range under discussion.

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