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electron-gamma compact colliders for muon based applications

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The conceptual design of a compact source of GeV-class muons is presented, based on a plasma based electron-gamma collider. Evaluations of muon flux, spectra and brilliance are presented, carried out with ad-hoc monte-carlo simulations of the electron-gamma collisions. These are analyzed in the context of a large spread of the invariant mass in the e-gamma interaction, due to the typical characteristics of plasma self-injected GeV electron beams, carrying large bunch charges with huge energy spread. The availability of a compact point-like muon source, triggerable at nsec level, may open a completely new scenario in the muon radiography application field.

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