

Using muons from backscattered photons on targets for various studies at the EIC

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Gamma Factory High Intensity Muon Source - Exploratory Studies

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One of the fundamental challenges for the future leptonic colliders and neutrino factories is to design and construct new high-intensity sources of muons. The next-generation sources should increase the intensity of the presently operating ones by at least three orders of the magnitude and include an important option of producing longitudinally polarized muons. The main effort to achieve this goal has been focused on the proton-beam-driven muon sources. We present exploratory studies of an alternative scheme which is based on high-intensity megawatt-class photon beams. Such beams can be delivered in the future by the Gamma Factory (GF) project. One of the GF multiple goals is to increase the energy range and the intensity of the presently operating photon sources. Such a leap can be achieved by extending the present hadron-collider modus operandi of the LHC with the new GF-operation-mode, allowing to collide atomic beams with laser pulses. The exploratory studies demonstrate that more than 10^{13} muons of both signs per second can be produced by the GF source.

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