

Abstract Submitted
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Compton based Polarized positron source for ILC, CLIC and SuperB VITALY YAKIMENKO, IGOR POGORELSKY, MICHAIL POLYANSKY, BNL — We propose a polarized gamma source suitable for generating a polarized positron beam for the next generation of electron-positron colliders, such as the International Linear Collider (ILC), and the Compact Linear Collider (CLIC). This 60-MeV polarized gamma source is based on Compton scattering inside a picosecond CO₂ laser cavity generated from electron bunches produced by a 6-GeV linac. We identified and experimentally verified the optimum conditions for obtaining at least one gamma photon per electron. After multiplication at several consecutive interaction points, the circularly polarized gamma rays are stopped on a target, thereby creating copious numbers of polarized positrons. We address the practicality of having an intracavity Compton-polarized positron source as the injector for these new colliders. This approach resolves many technical challenges of the baseline wiggler based approach and is particularly attractive as an upgrade option in case of the minimum ILC configuration.

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