Current Experimental and Simulation Activities at ELI-NP with the 1 and 10 PW Lines

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We will review the status of the ELI-NP commissioning experiments at 1PW and 10PW, including short-parabola experiments for ion acceleration and long-focal parabola experiments for electron acceleration, Compton backscattered radiation generation and muon pairs creation. We will also introduce a novel scheme to generate high-flux broad-band gamma beams with Nonlinear Inverse Compton Scattering by using the "peeler" electron acceleration scheme. Finally, a novel scheme to generate high-brightness electron beams and high-brilliance Compton backscattered gamma beams will be shown.

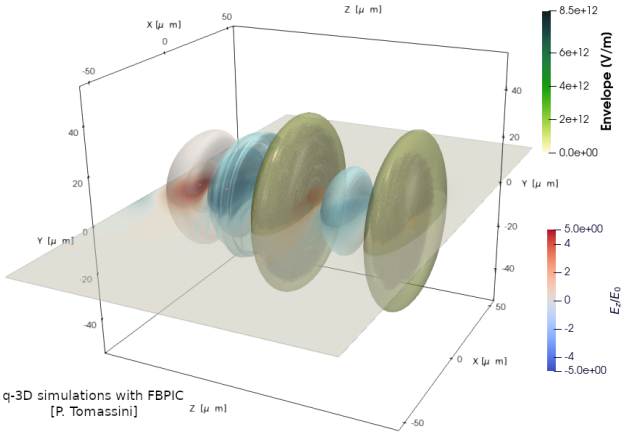

Figure 1: High-brightness electron beams generation for high-brilliance Compton backscattering gamma sources