

# Plasma Harmonic Generation for Highly Efficient Breit-Wheeler Pair Creation

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Observation of efficient Breit-Wheeler electron-positron pair creation is one of the main goals for modern-day strong laser-particle experiments. We propose exploring this process by colliding plasma-generated harmonics, from currently available laser pulses, with a beam of GeV photons. We show that the creation yield is enhanced for more than one order of magnitude, compared with the yield obtained without high-harmonic generation. The robustness of the yield enhancement is demonstrated by considering multiple interaction parameters and the potential photon source for the upcoming experiments. Moreover, we show that due to the evident field asymmetry in the plasma-generated harmonics, the spin-polarization of the created pairs could be as high as 60%.

## References

- [1] S Tang, arXiv:2305.08166(2023)