Hungarian-German WE-Heraeus Seminar



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Multiphoton Pair Production in the Collision of Circularly Polarized Waves

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Particle production by strong electric fields is the poster child for what happens when quantum electrodynamics is pushed to the extreme.

In this talk, we focus on the production of electron-positron pairs in two counterpropagating, circularly polarized electromagnetic fields. Using the Wigner formalism, we compute the corresponding correlation functions numerically and display the results as high-resolution momentum maps. Through spectroscopic analysis, we identify the polarization and kinematic signatures of the incident fields in the final positron distribution. Based on these findings, we present an intuitive model of helicity transfer in multiphoton pair production.

Publications [1] C. Kohlfürst, Phys. Rev. D 110 (2024), L111903.

Primary author: KOHLFUERST, Christian (Helmholtz-Zentrum Dresden Rossendorf)

Presenter: KOHLFUERST, Christian (Helmholtz-Zentrum Dresden Rossendorf)