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Light Utilization for Matter Emergence

Very strong electromagnetic fields can induce electron-positron pair creation predicted by quantum electrodynamics. A possible way to demonstrate it is via the multiphoton Breit-Wheeler process in strong laser fields. The challenge in this setup is to hold seed particles in the hot-spot region of the reaction. This method using radially polarised laser pulses to trap seed electrons is studied in *M. Jirka and S. Bulanov, PRL 133 125001 (2024)*, where SMILEI is employed because it contains modules for all the considered physics. This poster details the simulations and methods, it also provides perspective for forthcoming studies.

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