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## Many photons (under extreme conditions): light-by-light scattering

In the theory of Quantum Electrodynamics, loop corrections induce nonlinear interactions for the electromagnetic fields, allowing for effects such as light-by-light scattering.

One of the most promising scenarios for its experimental detection regards the quantum vacuum diffraction and birefringence of x-rays at the combined field of two optical lasers.

Reviewing this framework, we will compare various proposed scenarios; as a way to deal with experimental constraints, we analyze cases in which the initial and final x-ray photons differ not just in polarization, but also in propagation direction or energy. Based on arxiv:2208.14215 .

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