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Perspectives for future UPC measurements in ALICE during Run 3, Run 4 and Run 5

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The ALICE experiment has significantly upgraded its detectors. It will make possible to perform new measurements in the Ultra Peripheral Collisions (UPCs) of lead nuclei for the integrated luminosity of $\mathcal{L}^{\mathrm{Pb-Pb}} = 13/\mathrm{nb}$ during Run 3 and Run 4. For Run 5 and beyond, a completely new next-generation heavy-ion experiment ALICE 3 is proposed. The new detector system will cover
much larger pseudorapidity range $\Delta\eta \sim 8$ and reach very low $p_{\mathrm{T}} \sim 10$ MeV/c. The target integrated luminosity in Run 5 and beyond is $\mathcal{L}^{\mathrm{Pb-Pb}} = 35/\mathrm{nb}$. In this presentation, we will focus on prospects for measurements of the light-by-light scattering at low invariant masses below $M_{\mathrm{inv}} < 5$ GeV/c^2 and τ pair production in UPCs sensitive to the τ anomalous magnetic moment. Both processes are sensitive to physics beyond the Standard Model, in particular, light-by-light scattering measurements can be used to set new upper limits in axion-like particles searches. Perspectives of vector meson photoproduction measurements which allow for gluon distribution function constraints will be also presented.

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