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Light-by-light scattering in ultra-peripheral Pb+Pb collisions in the ATLAS experiment

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The ultra-peripheral Pb+Pb collisions at $\sqrt{s_{\mathrm{NN}}} = 5.02$ TeV performed at the ATLAS experiment are used to study a rare light-by-light scattering process, $\gamma\gamma \rightarrow \gamma\gamma$, allowed in Quantum Electrodynamics via a loop diagram.
The poster summarises recent light-by-light measurements conducted using a combination of 2015 and 2018 datasets recorded by the ATLAS experiment,
corresponding to an integrated luminosity of 2.2 nb^{-1}.
The light-by-light event candidates are required to consist of only two photons produced exclusively, each with transverse energy
$E_{\mathrm{T}} > 2.5$ GeV, pseudorapidity $|\eta| < 2.4$, diphoton invariant mass $m_{\gamma\gamma} > 5$ GeV,
and with diphoton transverse momentum $p_{\mathrm{T}\gamma\gamma} < 1$ GeV and acoplanarity below 0.01.
The differential distributions, presented as functions of kinematic and angular variables of the final-state photons, are unfolded for detector effects.
The fiducial and differential cross-sections are presented and compared with theoretical predictions.
The diphoton invariant mass distribution is used to set limits on the production of axion-like particles.

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