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## Prospects for testing Low's theorem with ALICE 3

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Soft theorems play a fundamental role in the development of quantum field theory. In scattering processes the production of soft photons diverges in the infrared in a controlled manner. Low's theorem relates the production cross section of a process with and without additional soft photon emission by a simple formula without dependence on the details of the process. However, this simple and fundamental prediction was found to strongly underestimate measured soft photon production in hadronic processes for previous experiments.

With this contribution we discuss the prospects of measuring and investigating this effect with the future ALICE 3 experiment using the proposed Forward Conversion Tracker (FCT). This detector can measure photons from collisions at LHC energies down to very low photon momenta. The resulting measured photons can then be related to the information about the hadronic event measured with ALICE 3. This allows exploration of the apparent discrepancy between calculations and experiment which would significantly impact our fundamental understanding of quantum field theories.

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