

Pion polarizabilities from a dispersive analysis of the $\gamma\gamma \rightarrow \pi\pi$ process

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We present results for the charged and neutral pion polarizabilities, obtained through a dispersive analysis of the photon-photon fusion process. This analysis is motivated by the current and future measurements at COMPASS and JLab (Hall D). While the predictions based on the unsubtracted dispersion relation, considering only the pion-pole left-hand cut, provide a relatively good qualitative description of the total cross-section data and the charged pion dipole polarizability, the neutron pion dipole polarizability turned out to be substantially different from the two-loop ChPT result. To account for the influence of heavier left-hand cuts, primarily governed by omega exchange, it becomes necessary to introduce subtraction constants. In the present work, we determine these constants by enforcing an Adler zero for the $\gamma\gamma \rightarrow \pi^0\pi^0$ amplitude and by fitting the available cross-section data.

Parallel Session

Poster Session

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