

# The interplay of axial mesons and short-distance constraints in $g-2$

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The anomalous magnetic moment of the muon,  $g-2$ , is among the most precise measured quantities in physics. Its nonzero value emerges purely out of quantum effects and its theoretical estimate involves all the known sectors of the Standard Model – QED, QCD, and EW sectors– to meet the current level of experimental precision. Interesting enough, there is at present  $3.7\sigma$  tension among experiment and theory, that suggests the possibility of new physics effects hiding around the corner. In order to confirm or discard such possibility, the new ongoing experiments need to be accompanied by precise theoretical estimates.

In this work, I will discuss the role of axial-vector meson contributions as well as short-distance constraints to the hadronic light-by-light contribution to the muon  $g-2$ . In particular, we point out to interesting connections among both of them that have been ignored in the past. Such connections allow to overcome theoretical difficulties when dealing with axial-vector mesons and help comparing the different available estimates. Furthermore, such relations shed light on current approaches to fulfill short-distance constraints, pointing to inconsistencies and possible solutions.

## Collaboration

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